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June 11, 2010

Mr. Ray Klimcsak
U.S. Environmental Protection Agency – Region 2
290 Broadway 19th Floor
New York, New York 10007-1866

RE: Sherwin-Williams/Hilliards Creek Site - Kirkwood Lake
Voorhees Township and Lindenwold Borough, New Jersey
Administrative Order Index No. II CERCLA-02-99-2035

Response to USEPA Comments*: Kirkwood Lake Investigation Report - Evaluation of Sampling Results* (dated April 30, 2010), and
Supplemental Remedial Investigation Work Plan, Kirkwood Lake Sediment and Soil Sampling and Residential Property Soil Sampling

Dear Mr. Klimcsak:

The Sherwin-Williams Company (Sherwin-Williams) is submitting this Supplemental Remedial Investigation Work Plan and Response to Comments to: a) address comments provided by the United States Environmental Protection Agency (EPA) on the April 30, 2009 *Kirkwood Lake Investigation Report - Evaluation of Sampling Results (2009 Kirkwood Lake Report)*; and b) propose additional sediment sampling and analysis in Kirkwood Lake, soil sampling and analysis on residential properties located along the northern shore of Kirkwood Lake, and soil sampling analysis to complete delineation along the southern shore of Kirkwood Lake, as requested. This document is being submitted within the schedule specified in the April 12, 2010 extension request from Ms. Mary Lou Capichioni of Sherwin-Williams.

This document is organized in three sections:

1. Response to Comments Included In Attachment 1 of the EPA Comment Letter;
2. Response to Comments Included in Attachment 2 of the EPA Comment Letter; and
3. Supplemental Remedial Investigation Work Plan, Kirkwood Lake Sediment and Soil Sampling and Residential Property Soil Sampling.

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Sherwin-Williams is proposing to conduct the additional sediment and soil sampling specified by the EPA in its March 11, 2010 comment letter. All specified soil and sediment samples will be collected. However, Sherwin-Williams is requesting, and has in this document provided support for, elimination of polychlorinated biphenyls (PCBs) and polynuclear aromatic hydrocarbons (PAHs) as analytical parameters for the residential soil sampling (see response to "Residential Sampling").

SECTION 1 - Response to Comments – Attachment 1

Presented below are Sherwin-Williams' responses to the EPA comments. The EPA comments are presented in *italics*, followed by the Sherwin-Williams response.

Sediment

EPA Comment

As stated earlier, EPA and NJDEP do not agree with the Report's conclusion that site-related contaminants (specifically lead and arsenic) are not present in the coarse-grained material. Table 1 summarizes the data collected within the coarse-grained material including: transect number; sample number; number of intervals sampled within the coarse-grained material; and observations. It is observed that there were numerous exceedances for arsenic within the coarse-grained material and that there were seventeen (17) samples which had lead results which were rejected ("R") during data validation. It does not however, include the number of samples at the ends of transects (typically always collected in coarse-grained sediments) that had arsenic results which either exceeded the screening criteria, or were qualified as rejected ("R") during data validation (See Table 2). In short, approximately half of the samples collected within the coarse-grained material either had exceedances for arsenic, or had data rejections for lead.

Using existing sample locations along existing Kirkwood Lake transects, EPA has outlined the samples (Table 3) which require additional delineation required within the coarse-grained sediments. EPA is requesting that the same sampling procedures (presented in the approved 2008 Kirkwood Lake Work Plan) be utilized to collect these sediment samples within the coarse-grained material. Samples should undergo analysis for: TAL Metals, grain size, total organic carbon, pH, and percent solids. In addition, XRF screening procedures should also be utilized to record arsenic and lead results. The sampling that EPA has outlined in Table 3, once completed, will bolster the usefulness of this data, where laboratory results have been rejected.

Response

Sherwin-Williams agrees to conduct the additional sediment sampling specified by the EPA. Sediment cores will be collected from all locations identified in Table 3 of the EPA comment letter, and the sample collection, screening and analytical methodology referenced by the EPA will be followed. More detail is provided in Section 3 -

"Supplemental Remedial Investigation Work Plan, Kirkwood Lake Sediment and Soil Sampling and Residential Property Soil Sampling".

The EPA comment states that Sherwin-Williams concluded that site-related constituents are not present in the coarse-grained material. For purposes of clarification, this was not Sherwin-Williams' conclusion; rather, it was concluded that the extent of the constituents in the coarse-grained material had been adequately delineated at depth, based on two considerations:

1. At depth, the coarse-grained material beneath Kirkwood Lake is soil, not sediment, since there is no potential for benthic exposure. Therefore, the NJDEP Residential Direct Contact Soil Remediation Standard (RDCSRS) of 19 milligrams per kilogram (mg/kg), not the NJDEP Ecological Screening Criteria (ESC) of 6 mg/kg, is the applicable screening criterion for arsenic in this material; and

2. The RDCSRS for arsenic is approached or achieved in the deepest samples collected in the coarse-grained material. For example, arsenic levels in samples obtained from the coarse-grained material in boring KWDD0038, which was extended to 11.0', ranged from 12.9 mg/kg in the 9.5'- 10.0' interval to 25.3 mg/kg in the 4.5'- 5.0' interval, and the arsenic concentration in the deepest sample (10.5'- 11.0') was 18.1 mg/kg, achieving the RDCSRS.

Sherwin-Williams provides this solely to clarify for EPA its conclusion in the report, and not to take issue with the EPA comment; as noted above, Sherwin-Williams has agreed to conduct the additional sediment sampling specified by the EPA.

The definition and use of the term "coarse-grained material" also requires discussion and clarification. As EPA is aware, the distinction between the "soft, organic-rich sediment" and the "coarse-grained" material (sometimes referred to as the "consolidated coarser-grained sand and silt") was originally established with regard to the characterization of Bridgewood Lake. Based on the physical characteristics of the sediment collected from Bridgewood Lake, there appeared to be a clear distinction between the "soft organic-rich sediment", which was characterized by low percent solids (typically less than 30%) and high organic carbon measurements (typically greater than 10% or 100,000 mg/kg), and the deeper coarse-grained material that was characterized by high percent solids (typically greater than 70%) and low organic carbon measurements (typically less than 0.5% or 5,000 mg/kg). This conceptual understanding of the sediment physical characteristics was applied in the presentation of the Kirkwood Lake results, and was reflected in the cross-sectional figures provided to EPA in the 2009 Kirkwood Lake Report, upon which EPA relied in preparing its comments.

However, as the EPA comments on the 2009 Kirkwood Lake Report were evaluated, and more attention was given to the sample results that were reported as being collected from the “coarse-grained material”, it became apparent that the simple characterization as either “soft organic-rich” or “coarse-grained” was inadequate to characterize the lithology beneath Kirkwood Lake. Based on this analysis, it was concluded the conceptual understanding of the physical characteristics of Kirkwood Lake sediments required a revision.

Rather than a clear distinction between the soft organic-rich sediments and the coarse-grained material, which was reported at Bridgewood Lake, there is a “transition material” of varying thickness beneath the soft organic-rich sediment and above the underlying coarse grained material. This transition material is characterized by percent solids and organic carbon measurements that range between the extremes measured in the soft organic-rich sediment and the coarse-grained material.

The revised interpretation of the physical characteristics of the sediment and soil beneath Kirkwood Lake is reflected in Figures 1 and 2, which compare and contrast the original and revised cross-sections for transects KWT-20 and KWT-29. These samples were selected for illustration purposes because they provide examples of samples originally interpreted as being collected from the coarse-grained material, but that are now believed were actually collected from the transition material, as well as samples that were collected from the coarse-grained material. The revised interpretation for all Kirkwood Lake transects will be provided when the data analysis report is submitted to the EPA following the next phase of sampling.

As shown on Figure 1 (KWT-20), five samples (KWDD0025 AA-AB, KWDD0025 AB-AC, KWDD0026 AA-AB, KWDD0028 AG-AH and KWDD0029 AA-AB) were originally reported as being collected from the coarse-grained material. However, a more detailed review of the percent solids and organic carbon measurements supports a conclusion that only one of these samples, KWDD0029 AA-AB, was actually obtained from the coarse-grained material. This sample contained the high percent solids (80%) and low organic carbon (3,000 mg/kg) values that are typical of the coarse-grained material. However, the other samples from KWT-20 that were presented in the 2009 Kirkwood Lake report as being from the coarse-grained material did not exhibit these characteristics:

- The percent solids measurement from the two samples obtained at location KWDD0025 (approximately 60%) were less than those typical of the coarse-grained material, and the organic carbon measurements (approximately 2% or 20,000 mg/kg), while less than those typical of the soft organic-rich sediment, were much higher than that typical of the coarse-grained material. Based on these observations, it has been concluded, as shown in the revised cross-section, that these samples were obtained from the transition material.

- A similar observation is valid for sample KWDD0026 AA-AB. Although it had a relatively high solids content (approximately 73%), its organic carbon content (approximately 5%) is much greater than would be predicted if the sample was obtained from the coarse-grained material. Based on these observations, the revised interpretation is that the sample was obtained from the transition material.

- The solids (approximately 16%) and organic carbon (approximately 25%) contents of KWDD0028 AG-AH support a conclusion that it was obtained from the soft organic-rich sediment, not the coarse-grained material. As shown on Figure 1, this reinterpretation of the physical characteristics of the sediment supports a conclusion that the soft organic-rich material is deeper in this location than previously believed.

The physical characteristics of sample KWDD0027 AA-AB illustrate how professional judgment is needed to interpret the percent solids and organic carbon measurements and develop conclusions regarding the sediment type. As shown, although the percent solid measurement of 26.8% would support a conclusion that the sample was obtained from the soft organic-rich sediment, the organic carbon content of approximately 8% is not as high as would be predicted if the sample was collected entirely from the soft organic-rich sediment.

The revised cross-section presented in Figure 2 (KWT0029) further illustrates the variation in the physical characteristics of the soft organic-rich sediment, the coarse-grained material and the transition material:

- Samples obtained at depth at location KWDD0038 (KWDD0038 AJ-AK through KWDD0038 AV-AW) provide typical characteristics of the coarse-grained material, with percent solids measurements ranging from approximately 76 - 81%, and organic carbon measurements of approximately 0.5% or lower (note that sample KWDD0038 AR-AS had an organic carbon content of 0.501%).

- Samples from the shallower intervals, in KWDD0038, contain a wide range of both percent solids and organic carbon measurements. The percent solids measurements in these samples range from 34.6 - 63.6%, while the organic carbon content ranges from 7,110 - 57,600 mg/kg. Despite the range in both percent solids and organic carbon content, it can be concluded from the results that none of these samples has the characteristics of either the soft organic-rich sediment or the coarse-grained material and, therefore they have been classified as being from the transition material.

- Sample KWDD0041 AG-AH provides another example of the need for professional judgment in characterizing the material in the sample. This sample was originally presented as being collected from the coarse-grained material. However, it has a relatively low solids content (32.1%) and high organic carbon content (99,100 mg/kg). Although both measurements are slightly outside the typical limits assumed for the soft organic-rich sediment (30% solids and 100,000 mg/kg organic carbon), the variation is small enough that the sample has been classified as being collected from the soft organic-rich sediment.

The transition zone interpretation can also be seen in the attached Table 1, which presents the percent solids and organic carbon measurements from the sample locations identified in EPA's Table 1 of the March 2010 comment letter as being collected from the coarse-grained material. It is acknowledged that EPA's interpretation of the material the samples were collected from was based on the information and figures presented in the 2009 Kirkwood Lake Report.

As shown on the table, only a few of the samples initially presented in the 2009 Kirkwood Lake Report (locations KWDD0112, KWDD0024, KWDD0036, KWDD0038 and KWDD0065) as being collected from the coarse-grained material contained the high percent solids and low organic carbon typical of this material. The remainder of the samples initially presented as being from the coarse-grained material contained low to moderate percent solids and/or elevated organic carbon levels. Good examples of the physical characteristics of this transition zone sediment are shown in the samples obtained from the 2.5'- 3.0' intervals at locations KWDD0012 and KWDD0080. Although these samples contained percent solids values that could be interpreted to be from the coarse-grained material (60 - 65%), the organic carbon measurements (approximately 30,000 mg/kg) are much higher than would be expected from the coarse-grained material. These contrast with the previously mentioned samples (locations KWDD0112, KWDD0024, KWDD0036, KWDD0038 and KWDD0065) which were of the coarse-grained material, where the percent solids were in the range of 80% and organic carbon measurements were 1,400 - 2,650 mg/kg.

It is also noted from Table 1 that, in some instances, (samples from locations KWDD0028, KWDD0060, KWDD0069 and KWDD0089), the very low percent solids and high organic carbon measurements support a conclusion that the samples were from the soft organic-rich sediment.

As a result of the evaluation described above, Sherwin-Williams will expand the description of the samples collected in Kirkwood Lake to include “transition material” as well as “soft organic-rich sediment” and “coarse-grained material”. This description will be based upon the field observations and the percent solids and organic carbon measurements obtained from the laboratory. Based on review of photographs of the samples collected during the second phase of sampling and discussions with the field team, it has been concluded that field observations cannot be solely relied upon to describe the type of sample material.

Regardless of the type of material sampled, the XRF will remain the primary tool used to guide the vertical extent of the investigation in Kirkwood Lake. Although the more detailed description of the physical characteristics of the sediment will be provided, the objective of the investigation is to understand the vertical and horizontal extent of constituents beneath Kirkwood Lake, and the XRF will continue to be used to determine if vertical delineation to the appropriate screening criteria has been achieved.

Soil

EPA Comment

EPA concurs with the proposed soil locations (discussed in Section 4.1, page 16 of the Kirkwood Lake Report) which require additional delineation. Sample analysis and field screening methodologies should be the same as what was presented in the approved Work Plan.

Response

Sherwin-Williams will conduct additional soil sampling along the southern shore of Kirkwood Lake, as discussed in the 2009 Kirkwood Lake Report. No specific sampling program was proposed in the 2009 Kirkwood Lake report, so the details of the proposed soil sampling are presented in Section 3 - “Supplemental Remedial Investigation Work Plan, Kirkwood Lake Sediment and Soil Sampling and Residential Property Soil Sampling”.

Residential Sampling

EPA Comment

Between 2002 and 2003, soil at 34 out of the 41 homes along Kirkwood Lake were sampled (it could be stated that 2 of the 41 are not in contact with the lake). During 3 different sampling events, the number of samples collected (at least 1 and up to 5) per property and the analyses performed on the samples themselves varied. Each location was sampled at the 0.0- 0.5 ft. and the 1.0 – 1.5 ft. interval. A review of the sampling results indicates that 10 of the 34 properties sampled had at least one exceedance for either lead or arsenic. A closer look at the data reveals that, 6 of the properties had an exceedance at the surface only; 1 had only a subsurface exceedance; and 3 had an exeedance for both intervals. Arsenic concentrations ranged from 20.6 to 49.9 parts per million (ppm) at the surface and 47.8 to 60.2 ppm at the subsurface. Lead concentrations ranged from 455 to 1,280 ppm at the surface and 668 to 2,800 ppm at the subsurface.

EPA is requesting that all 10 properties which exhibited an exccedance (1136, 1148, 1152, 1156, 1186, 1188, 1192, 1200, 1212, and 1250) be re-sampled. In addition, EPA is requesting that the following properties: 1108, 1184, and 1208 be sampled because they were not previously sampled and are adjacent to properties which exhibited exceedances. Finally, EPA is requesting that the following properties also be sampled: 1144 and 1232 (all of which had samples that were collected at distances away from the shoreline), the residential property (which is not numbered) but is located between property 1232 and 1240 in Figure 3 of the June 2007 "Removal Action Addendum Report – Kirkwood Lake Sampling Program Hilliard Creek Site" submitted to EPA Removal Program by the Sherwin-Williams Company, and 1240 (3 samples along shoreline, but no samples collected within the cove area).

The sampling procedures at these properties should be consistent with the approved methodologies and procedures used at other residential properties during RI activities. Each property should have 10 locations sampled (each having two intervals), interviews should be performed with the property owners to see if sediments and/or soil has been moved (spread) about the property. The analytical parameters should include: TAL metals, PCBs and PAHs.

EPA may request additional residential sampling at a later time.

Response

Sherwin-Williams will conduct the residential sampling requested by the EPA at the locations referenced in the comments. It is Sherwin-Williams' understanding that the property located between 1232 and 1240 Kirkwood Gibbsboro Road is owned by the county and is not a residential property.

Sherwin-Williams is requesting that EPA revise the analytical parameters to include only TAL Metals. An evaluation of soil and sediment data from Kirkwood Lake has been performed, and the results strongly support a conclusion that neither PCBs nor PAHs are likely to be found at concentrations greater than the RDCSRS in Kirkwood Lake residential soil as a result of downstream transport from upstream sources. The evaluation of results is included as Appendix A to this Response to Comments/Supplemental Remedial Investigation Work Plan, but the following provides a summary of the primary conclusions.

PAHs

A total of 77 soil samples were collected at 38 locations along the southern shore of Kirkwood Lake. In these samples, one or more PAH compounds were found at a concentration greater than the RDCSRS in only five locations, all of which were either along the Cooper River, north of White Horse Road, or near the southwest end of the lake, adjacent to the PATCO facility (see Appendix B for Figure 1 - Kirkwood Lake Sample Location Map excerpted from the 2009 Kirkwood Lake Report). Notably, no other soil samples collected from the south side of the lake contained PAHs at a level greater than the RDCSRS, despite the fact that soil samples were collected from the south end of 17 transects.

Even in the samples where one or more PAHs were found at levels above the RDCSRS, the concentrations were relatively low, as reflected in the table below. The highest concentrations of any individual PAH were approximately 5 mg/kg, and the highest concentrations were all found in one sample (SB-32-SS-AE-AF, 2.0'- 2.5') located near the PATCO facility.

Soil Exceedance Summary (PAH)

Compound	No. Detects	N	Min Detect	Mean	Max Detect	NJ RDCSRS mg/kg	Exceed Ratio	Num Exceed	Units
BENZO(A)ANTHRACENE	46	77	0.005	0.23	5.6	0.6	9	3	mg/kg
BENZO(A)PYRENE	41	77	0.005	0.26	5.1	0.2	25	8	mg/kg
BENZO(B)FLUORANTHENE	46	77	0.005	0.30	4.9	0.6	8	6	mg/kg
INDENO(1,2,3-CD)PYRENE	25	77	0.006	0.22	2.5	0.6	4	1	mg/kg

In summary:

- PAHs were found at levels greater than the RDCSRS in only five of 38 locations, each of which was potentially the result of a source other than downstream transport;
- PAHs were not found at levels greater than the RDCSRS in the samples collected from 17 other locations at the southern end of the Kirkwood Lake transects; and

- Even where found at concentrations greater than the RDCSRS, the levels were relatively low.

Based on the above, it is requested that PAHs not be included in the residential sampling.

PCBs

No soil samples collected from the Kirkwood Lake Transects were analyzed for PCBs. Therefore, the sediment data were evaluated against the RDCSRS to assess the potential for PCBs in sediment to contaminate soil adjacent to the lake such that the RDCSRS would be exceeded.

A total of 175 Kirkwood Lake sediment samples from all depths were analyzed for PCBs. Of these 175 samples, Aroclor-1242 was found in one sample at a concentration greater than the RDCSRS (0.29 mg/kg, compared to RDCSRS of 0.2 mg/kg). Aroclor-1254, was found in 42 samples at a concentration greater than the RDCSRS, but the highest concentration found was 0.62 mg/kg, compared to RDCSRS of 0.2 mg/kg. In surface sediment, only Aroclor-1254 was found at a level greater than the RDCSRS. It was found in 36 of 118 samples at a level greater than the RDCSRS, with a maximum concentration of 0.56 mg/kg. The mean concentration of Aroclor-1254 was 0.19 mg/kg. The summary statistics of the sediment data are presented in the table below.

Sediment Exceedance Summary (PAH and PCB)

Compound	No. Detects	N	Min Detect	Mean	Max Detect	NJ RDCSRS	Exceed Ratio	Num Exceed	Units
ALL SAMPLES									
Aroclor-1242	6	175	0.079	0.082	0.29	0.2	1.4	1	mg/kg
Aroclor-1254	65	175	0.027	0.16	0.62	0.2	3	42	mg/kg
SURFACE SEDIMENT									
Aroclor-1242	2	118	0.11	0.085	0.29	0.2	1.4	1	mg/kg
Aroclor-1254	55	118	0.027	0.19	0.56	0.2	3	36	mg/kg

The analysis supports a conclusion that it is highly unlikely that PCBs would be present at levels greater than the RDCSRS in residential soil adjacent to Kirkwood Lake as a result of downstream transport under any reasonable scenario. Less than one-quarter of all sediment samples, and less than one-third of the surface samples exceeded the RDCSRS. The maximum PCB concentrations, although above the RDCSRS, were relatively low, and the average concentrations of both Aroclor 1242 and 1254 were less than the RDCSRS. If the PCBs were present in sediment as a result of downstream transport, the only mechanism by which they could be present in residential soil would be a flood event. In this scenario, an adequate mass of contaminated sediment would need to be transported from the bottom of the lake to the residential properties such that the concentration of PCBs in the mixture of sediment and soil exceeded the RDCSRS. Given the relatively low frequency of detection, and the low peak and average concentrations, this scenario does not appear likely.

Based on this analysis, Sherwin-Williams requests that PCBs not be included in the residential sampling.

Evaluation Of Background Conditions

<u>EPA Comment</u>

EPA, at this time, is not requesting additional evaluation of potential background conditions/ sources in, or in the vicinity of, Kirkwood Lake soils and sediments.

<u>Response</u>

Comment acknowledged.

Additional Filtered Water Samples

<u>EPA Comment</u>

At this time, EPA is not requesting that additional surface water samples be collected.

<u>Response</u>

Comment Acknowledged

Additional Pore Water Sampling

NJDEP Comment - This section within the Kirkwood Lake Report contains a description of the pore water samples that were attempted. The attempts were not successful in that the total dissolved solids made the metals content of the samples difficult to interpret. The report goes on to state that additional pore water data may be needed. The NJDEP recommends that Sherwin-Williams install a shallow monitoring well across the first water table at a location between White Horse Road and samples KWSB0014 and KWSB0015. Using a low flow sampling technique, this well should be able to discern any metals leaching into groundwater from contaminated sediment, and aid in determining the bioavailability of the metals.

<u>Response</u>

The subject of pore water collection has been previously discussed for the Dump Site, and it was concluded that when pore water sampling is conducted, both filtered and unfiltered pore water samples will be collected. With this modification to the sampling protocol, Sherwin-Williams is not proposing to install the NJDEP-recommended monitor well, but will collect both filtered and unfiltered samples for TAL metals analysis if and when pore water samples are collected in the future. At this time, Sherwin-Williams is not proposing additional pore water samples, but additional sampling may be proposed to support the risk assessment in the future.

Benthic Survey and/or Toxicity Testing

EPA Comment

The approved RI/FS Work Plan states that a screening-level ecological risk assessment (SLERA) will be prepared and that a baseline ecological risk assessment (BERA) may be conducted if necessary. However, at this time EPA is requesting that a preliminary habitat assessment and a wetlands delineation (report) be conducted for Kirkwood Lake. Kirkwood Lake was not included in the August 28, 2009 Preliminary Habitat Assessment Report *nor the June 2, 2009* Wetland Delineation Technical Memorandum, *both submitted to EPA by the Sherwin-Williams Company*.

Response

A preliminary habitat assessment and wetlands delineation will be conducted for Kirkwood Lake. The results will be submitted as a separate report from the soil and sediment investigation results.

Post Dam-Maintenance (Work) Sampling Below The Kirkwood Lake Dam

EPA Comment

At the most recent briefing with Voorhees Township (town council and environmental commission members) it was remarked that turbid water was noticed flowing downstream during Kirkwood Lake dam-maintenance activities. EPA is requesting that Sherwin-Williams submit a proposal to collect several samples (soil and sediments) at points immediately below the dam and at points 50, 100, and 150 ft. downstream of the outflow.

Response

Additional soil and sediment samples will be collected at locations below the dam. More detail regarding samples collection and analysis is presented in “Supplemental Remedial Investigation Work Plan, Kirkwood Lake Sediment and Soil Sampling and Residential Property Soil Sampling”.

SECTION 2 - Response to Comments in Attachment 2

General Comments

1. *The specific comments below should be addressed, in a revised evaluation report, once the field activities outlined in Attachment 1 are completed.*

Response: A revised evaluation report will be submitted once the field activities are completed, and the data received and evaluated. Data from each of the sampling events will be included in the report.

2. *Overall, additional detail is required in the report for the following items and/or activities: lake profiling activities (methodology utilized to determine the depth of the fine-grained sediments); collocated XRF screening results; coarse-grain sediment sample locations from which the Vibracore™ or "suction-sampler" was used.*

Response: The revised evaluation report will provide the requested detail.

Specific Comments

1. *Figures 3A and 3B should include the transect names (KWT-#) parallel to the respective transect number.*

Response: When resubmitted in the revised data evaluation report, the figure showing the locations where constituents were found at levels greater than the NJDEP ESC will show the transect numbers.

2. *Figures 4A through 4D, an appropriate indicator (such as a shaded line) should be used to indicate that the depths of the lake's sediment bottom (depicted on the figure) are approximate between sample locations, along with a statement that they are approximated and are being extrapolated.*

Response: When the revised data evaluation report is submitted, appropriate indicators will be provided on the figures to identify where professional judgment was used to interpret the physical characteristics of the lake bottom.

3. *First paragraph, it is stated that the Sherwin-Williams sites are located in Gibbsboro, but later the same sentence states that Kirkwood Lake is located in Voorhees and Lindenwold, so for an unfamiliar reader, this is confusing.*

Response: The EPA has previously requested that, when discussing the Sherwin-Williams sites, the term "*Sherwin-Williams sites located in Gibbsboro, New Jersey*" be used. When the revised data evaluation report is submitted, the introductory paragraph will be clarified.

4. *Please correct the spelling of Carole Petersen's name (incorrectly spelled on Page 2).*

Response: Carole Petersen's name will be spelled correctly when the revised report is submitted.

5. *Section 2.0 Screening Criteria, page 2 – EPA is requesting that the terminology "phase(s)" be used to reference the different sampling events which occurred at Kirkwood Lake during the RI. Please note, the term "phases" was used on page 1, yet on page 2 the term "second sampling event" is used. Later on page 2, the term "initial sediment sampling results" is used. In addition, the last sentence of page two appears to reference the use of the XRF (field screening tool), if this is the case, please state as such.*

Response: When the revised data evaluation report is submitted, the term "phase" will be consistently used to distinguish between the three different phases of sediment sampling that will have been conducted in the lake. The phases in which the XRF unit was used will be clearly stated.

6. *Page 3, 2nd bullet. The report was authored in April of 2009. The freshwater sediment criteria referenced are said to have been published in July of 2008. The most recent NJDEP ecological screening criteria, including those for freshwater sediment, are dated March 10, 2009. The latest published screening criteria pre-date the authoring of the report so these should be referenced rather than the July 2008 screening criteria.*

Response: Although the publication of the report is April 2009, it is to be noted that preparation of the report required several months. The initial step in preparing the report included identification of the screening criteria for comparison with the results of the investigation. Once those screening criteria were identified, and the data analysis commenced, it was impractical to restart that process when NJDEP revised its criteria. When the revised data evaluation report is prepared, the NJDEP ESC in effect at the time the report preparation is initiated will be used.

7. *Page 4, first full sentence – Clarification of the following statement is needed: "descriptors were based upon the field team's ability to penetrate the sediments". Please provide the tools or field methodologies which were used.*

Response: The statement refers to how the description of the type of material encountered – "soft organic-rich sediment" and "coarse-grained material" – was determined. As described below, the depth of the soft organic-rich sediment was determined based on the ability of the measuring device to penetrate this sediment.

The sample types classified in the field logs were based on a measuring device designed in the field to estimate the depth to the soft organic-rich sediment and the depth to the deeper coarse-grained material. The thickness of the soft organic-rich sediment could then be estimated by simple subtraction – depth to coarse-grained material minus depth to soft organic-rich sediment equals thickness of the soft organic-rich sediment.

It should be noted that this method simply yields the depth to the more competent substrate below the “soft” silty organic-rich sediments, and does not distinguish between the transition zone sediments and underlying coarse-grained sediments/soils. This discussion has been presented in greater detail in the earlier responses to the EPA Comments (see Section 1 - Attachment 1 – Sediment).

In order to estimate the depth to the “soft” sediment, a measuring staff was constructed from a 1-inch diameter section of PVC tubing graduated in feet and in tenths with a plywood base measuring approximately 12 x 12 inches (1 square foot) fastened to the bottom of the PVC tubing.

This design allows one to gauge when the measuring device makes contact with the top of the “soft” sediment, as the surface area of the plywood base rests on top of, and does not readily penetrate this material. This contact is discerned when the unit meets resistance with the “soft” organic-rich material overlying the lake bottom.

In order to estimate the depth to the “hard” sediment, a smaller ¾-inch diameter PVC tubing (also graduated in feet and tenths) was nested inside the 1-inch diameter measuring staff. Once the depth to the “soft” sediment was determined based upon the contact of the 1-foot square plywood base, the inner PVC staff was then extended through the center of the tubing and plywood base until it made contact with the underlying more competent “hard” sediment.

The inner PVC staff (¾-inch diameter) easily penetrates the “soft” fine-grained organic-rich material; however it meets resistance once it makes contact with the deeper and more competent coarse-grained “hard” sediment/soils underling the “soft” sediment. There was no undue pressure applied to force the staff into the “hard” sediment.

This simple differentiation in sediment load-bearing and penetration characteristics can be likened to a person stepping in the lake, sinking through the “soft” sediments and coming to a rest on the more competent underlying “hard” sediments.

The observations collected during the Vibracore-sampling event were also used to supplement the information obtained by using the measuring staff.

8. *Page 6, last bullet. Should include sentence that additional 3-foot core was advanced in order to continue XRF screening beyond the 2.5-3 ft interval.*

Response: When the revised data evaluation report is prepared, appropriate descriptors of the sampling methodology during each phase will be presented.

9. *Section 3.2 Sediment Investigation Results, page 7 – First bullet, last sentence should be corrected to state that, "Only the arsenic and lead analytical results greater than the NJDEP LELs are shown on Figure 2.*

Response: When the revised data evaluation report is prepared, the appropriate descriptors of the figures will be included in the text.

10. *Page 11, 3rd paragraph. The "statewide background concentration" of arsenic should be provided in the text (19 mg/kg) as well as the "range of natural background concentrations" for chromium.*

Response: When the revised data evaluation report is submitted, and if natural background conditions are used as comparison criteria, the values will be provided in the text.

11. *Section 5 – Surface Water, 2nd paragraph from bottom of page. If turbidity is suspected to have caused the elevated lead concentration in surface water sample KWDW0010, other metals such as iron, magnesium and manganese would be expected to have been elevated in that sample as well which is not the case. Provide the turbidity field measurements for the surface water samples in the text or in the appendices to support this assumption.*

The assertion that increases in all metals would be predicted if there was an increase in turbidity would be true only if the other metals were present on the entrained sediment particles in the same general relative concentrations. If one constituent, such as lead, was preferentially sorbed to the sediment particles, then a preferential increase in the concentration of that constituent would be observed.

In future submissions if turbidity is suspected of being the cause of elevated constituent concentrations in water samples, the turbidity level will be cited.

12. *The text and the figures incorrectly represent the road that extends over the stream at the Western end of Kirkwood Lake as the White Horse Pike. This is actually the White Horse Road and may cause some confusion since the "White Horse Pike" is*

actually several hundred feet to the south of Kirkwood Lake but never traverses the lake or the stream. Future references should use the correct street name.

Response: Future figures will use the correct street name.

SECTION 3 - SUPPLEMENTAL REMEDIAL INVESTIGATION WORK PLAN, KIRKWOOD LAKE SEDIMENT AND SOIL SAMPLING, AND RESIDENTIAL SAMPLING

Sherwin-Williams will conduct the additional Kirkwood Lake sediment and residential soil sampling specified in the EPA comment letter, and will conduct additional soil sampling along the southern shore of Kirkwood Lake, as discussed in the April 2009 Kirkwood Lake Report. As stated previously, however, Sherwin-Williams is requesting that EPA limit the analytical parameters for the residential sampling to TAL Metals (plus cyanide) based on the analysis of PAH concentrations in soil samples and PCB concentrations in sediment samples collected during the first phase of sampling.

Kirkwood Lake Sediment Sampling

Sherwin-Williams will collect sediment samples from the locations identified by EPA in Table 3 of its comment letter. The locations are shown on Figure 3.

Prior to sampling, the water depth, depth to the top of sediment, and the thickness of the soft organic-rich sediment will be gauged in each location.

Based on previous experience, it is predicted that sediment samples will be collected using a variety of methods, based upon the depth of the sample being collected and the field conditions observed at the time of sampling. Sediment samples from the upper 6-inch interval will most likely be collected using an Ekman sampler (i.e., clamshell sampler). Deeper samples of the soft organic-rich sediment will be collected either utilizing a suction sediment coring device or by a Vibracore™ sampling tool, depending on the recovery of the soft organic-rich sediment with the Vibracore™. Sediment samples from the transition material and the deeper coarse-grained material will be collected with a Vibracore™ in those locations accessible by boat and with either a hand auger, hand-driven spoon or core, or the suction sediment coring device at shoreline locations not readily accessible with the Vibracore™ sampler due to the shallow water depth.

All sampling equipment will be decontaminated prior to use. The samples of the fine-grained material in the upper six inches will be collected first, homogenized and placed in laboratory-provided containers for transport to the laboratory.

The cores will be field screened at two-foot intervals with an XRF unit. At depths of less than six feet from the top of the sediment, samples will be collected for laboratory analysis from the bottom six inches of each two-foot interval where XRF analysis finds arsenic or lead at a concentration greater than the NJDEP ESC.

Samples collected from depth greater than six feet will be compared to the NJDEP RDCSRS. Based on the results of the second phase of Kirkwood lake sampling, the coarse-grained material will be encountered at or above this depth. Since these materials, located beneath the soft organic-rich sediment and the transition zone material, are more appropriately classified as soil, the RDCSRS is the most appropriate screening criteria. Samples will be collected from every two-foot interval at which the XRF screening finds arsenic or lead at a concentration greater than the RDCSRS.

All samples will be analyzed for TAL Metals (plus cyanide), percent solids and total organic carbon.

<u>Residential Soil Sampling</u>

Sherwin-Williams will conduct residential soil sampling at the residences along the north shore of Kirkwood Lake identified by EPA in its comment letter. The properties are shown on Figure 4. It is Sherwin-Williams' understanding that the property located between 1232 and 1240 Kirkwood-Gibbsboro Road is owned by the county and is not a residential property.

Sherwin-Williams will request access from the property owners to conduct the sampling. When access is obtained, Sherwin-Williams will conduct an interview with the property owner to determine their knowledge of historical soil movement or use of lake sediment on the property. A copy of the questionnaire that will be used is included as Appendix C.

Once the questionnaire for a property is received, Sherwin-Williams will conduct a site visit with EPA and its oversight contractor to identify the ten sampling locations for each property. The sampling locations will be jointly decided upon and will consider the results of the interview with the property owner and the physical characteristics of the individual property.

Soil samples will be collected from the 0.0'- 0.5' and 2.0'- 2.5' intervals and analyzed for TAL Metals (plus cyanide). The deeper sample in each location will be field screened with the XRF and, if arsenic or lead is found at a concentration greater than the

RDCSRS, a sample will be obtained from the next deeper one-foot interval. This will continue until neither arsenic nor lead is found at a concentration above the RDCSRS with the XRF. All samples collected will be analyzed for TAL Metals plus cyanide.

Cooper River Sediment and Soil Sampling Below Kirkwood Lake Dam

As requested by EPA, Sherwin-Williams will collect sediment and soil samples at three locations in the Cooper River: the first sample immediately below the Kirkwood Lake dam, the second sample halfway between the dam outfall and the culvert that runs under White Horse Road, and the third sample before the culvert that runs under White Horse Road. These samples will all be collected downstream of the Kirkwood Lake Dam and before the culvert that runs under White Horse Road and the sample locations are shown on Figure 3.

At each location sediment samples will be collected from the centerline of the stream, and soil samples will be collected on each bank of the river, approximately five feet from the shoreline. Sediment and soil samples will be collected from the 0.0'– 0.5' interval and from the 2.0'- 2.5' interval and analyzed for TAL Metals (plus cyanide). The sediment or soil samples from the 2.0'- 2.5' interval at each location will be analyzed with the XRF unit. If arsenic or lead is found at a concentration greater than the RDCSRS, a sample will be obtained from the next deeper one-foot interval. This will continue until neither arsenic nor lead is found at a concentration greater than the RDCSRS. All samples collected will be analyzed for TAL Metals (plus cyanide). The sediment samples will also be analyzed for percent solids and total organic carbon.

Soil Sampling on Southern Shore of Kirkwood Lake

The April 2009 Kirkwood Lake Report stated that additional characterization along the southern shore of Kirkwood Lake was needed to better understand the extent of constituents in soil.

The table below presents the sample locations, depth, arsenic or lead concentration, and the proposal for additional vertical or horizontal delineation. Locations of these samples and the proposed delineation samples are presented on Figure 3. The samples are organized by transect, running from west to east along Kirkwood Lake.

Location	Depth	Constituent	Concentration (mg/kg)	Delineation Needed
KWSB0013	0.0'- 0.5'	Arsenic	25.2	Horizontal delineation required; vertical delineation achieved at 2.0'– 2.5'
		Lead	1,680	
KWSB0035	0.0'- 0.5'	Lead	592	Vertical delineation required; horizontal delineation achieved at KWSB0031 and 0032
KWSB0038	6.0'- 6.5'	Arsenic	21.5	Vertical delineation required; horizontal delineation achieved at KWSB0034
KWSB0007	0.0'- 0.5'	Lead	914	Horizontal delineation required; vertical delineation achieved at 2.0'– 2.5'
KWSB0006	2.0'- 2.5'	Arsenic	49.2	Horizontal and vertical
KWSB0004	0.0'- 0.5'	Lead	487	Horizontal

Sample screening, collection and analysis will be conducted as discussed below for each location.

Location KWSB0006 - Horizontal and Vertical Delineation

A sample will be collected from the 4.0'- 4.5' interval at the former location of KWSB0006 to vertically delineate the arsenic found at 2.0'- 2.5'. This initial sample will be screened with the XRF. If the XRF analysis finds neither arsenic nor lead at a concentration greater than the RDCSRS, the sample will be collected and sent to the laboratory for analysis for TAL Metals (plus cyanide). If the XRF finds either arsenic or lead at a level greater than the RDCSRS, the boring will be extended another 2 feet and a sample collected and screened. This will be continued until neither arsenic nor lead is found at a level greater than the RDCSRS. All samples collected will be analyzed for TAL Metals (plus cyanide).

A horizontal delineation boring will be installed approximately 10 feet east of KWSB0006 (away from the shoreline), as shown on Figure 3. Samples will be collected from the 0.0'- 0.5' and 2.0'- 2.5' intervals and any additional intervals where arsenic or lead were found at a concentration greater than the RDCSRS in the vertical delineation boring. These samples will be field screened with the XRF. If neither arsenic nor lead is found at a concentration greater than the RDCSRS, the sample(s) collected from the step-out boring will be sent to the laboratory for analysis.

If arsenic or lead is found at a level greater than the RDCSRS in any sample, another step-out boring will be installed. Samples will be collected from the surface (0.0'- 0.5') to the deepest interval at which arsenic or lead were found at a concentration greater than the RDCSRS in the original step out boring. These samples will be analyzed with the XRF. If neither arsenic nor lead is found at a concentration greater than the RDCSRS, the collected samples will be sent to the laboratory for analysis. If arsenic or lead are found at a concentration greater than the RDCSRS, another step-out boring will be installed and samples collected from the surface to the deepest interval in which arsenic or lead was found in the original step-out boring at a concentration greater than the RDCSRS. This will continue until neither lead nor arsenic are found at a concentration greater than the RDCSRS with the XRF. All collected samples will be sent to the laboratory for analysis for TAL Metals (plus cyanide).

Locations Requiring Only Vertical Delineation (KWSB0035, KWSB0038)

A sample will be collected from the next deepest two-foot interval at each location. At location KWSB0035, the initial sample will be obtained from the 2.0’- 2.5’ interval, and at KWSB0038, the initial sample will be obtained from the 8.0’- 8.5’ interval. All of the initial samples will be screened with the XRF. If the XRF analysis finds neither arsenic nor lead at a concentration greater than the RDCSRS, the sample will be collected and sent to the laboratory for analysis for TAL Metals (plus cyanide). If the XRF finds either arsenic or lead at a concentration greater than the RDCSRS, the boring will be extended another 2 feet and a sample collected and screened. This will be continued until neither arsenic nor lead is found at a concentration greater than the RDCSRS. All samples collected will be analyzed for TAL Metals (plus cyanide).

Locations Requiring Only Horizontal Delineation (KWSB0013, KWSB0007, KWSB0004)

A sample will be collected from the 0.0’- 0.5’ interval at a distance approximately 10 feet further away from the lake shore at each location. For locations KWSB0013 and KWSB0004, the samples will be collected approximately 10 feet south of the original samples, and at KWSB0007, the sample will be collected approximately 10 feet to the east.

These samples will be field screened with the XRF. If neither arsenic nor lead is found at a concentration greater than the RDCSRS, the samples will be collected for laboratory analysis. If, however, arsenic or lead is found at a concentration greater than the RDCSRS, another sample will be collected from the 0.0’- 0.5’ interval approximately 10 feet further form the lake. This will continue until neither arsenic nor lead is found at a concentration greater than the RDCSRS.

If arsenic or lead is found in the horizontal delineation sample(s), a vertical delineation sample will be obtained from the 2.0’- 2.5’ interval at that location to confirm that vertical delineation is achieved.

All samples collected will be analyzed for TAL Metals (plus cyanide).

All sediment and soil sampling will be conducted in a manner consistent with the approved 2009 Quality Assurance Project Plan (QAPP) for the Former Manufacturing Plant (FMP) site.

Should you have any other recommendations or if you have any questions or comments, please do not hesitate to contact me at (216) 566-1794 or via e-mail at mlcapichioni@sherwin.com.

Sincerely,

Mary Lou Capichioni

Mary Lou Capichioni
Director Remediation Services

Attachment
cc: J. Josephson, USEPA
M. Pensak, USEPA
W. Sy, USEPA
P. Parvin, HDR
J. Doyon, NJDEP (4 copies)
C. Fishman – Camden County Parks Department
J. Gerulis, Sherwin-Williams (w/o enclosures)
A. Danzig, Sherwin-Williams (w/o enclosures)
S. Peticolas, Gibbons, Del Deo, Dolan, Griffinger, & Vecchione (w/o enclosures)
H. Martin, ELM
R. Mattuck, Gradient
S. Jones, Weston Solutions
S. Clough, Weston
A. Fischer, Weston

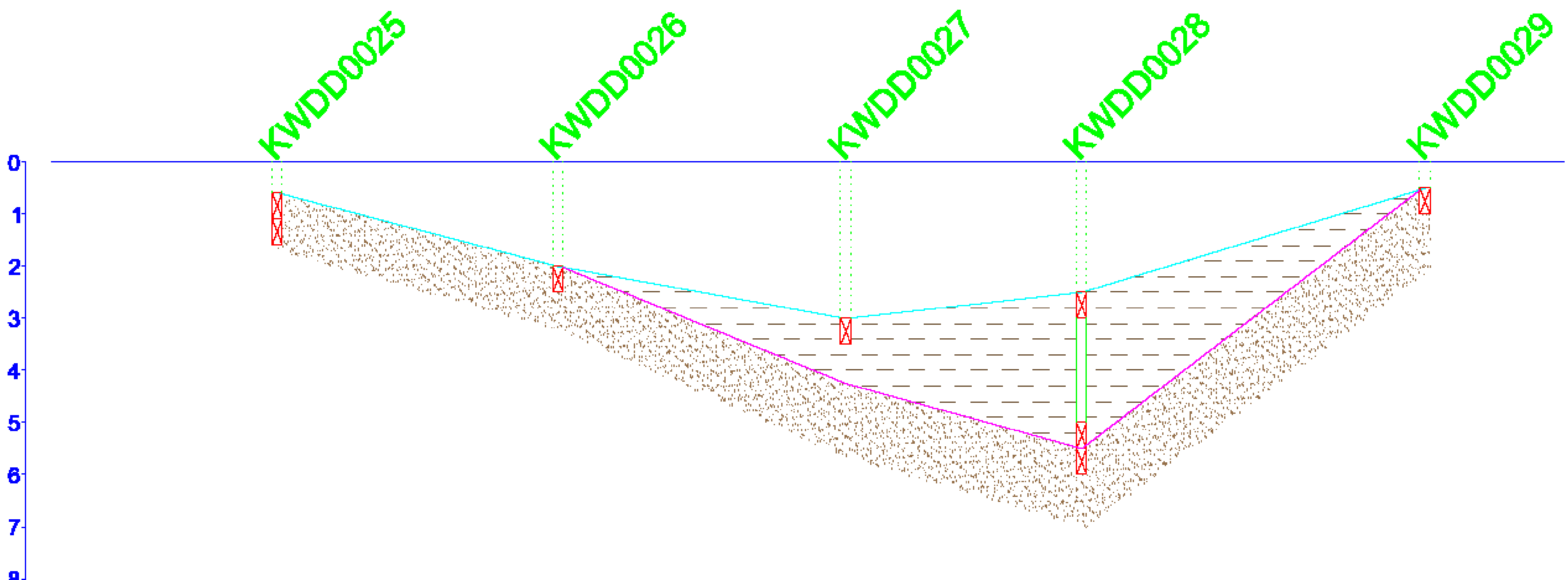
TABLES

Table 1 - Percent Solids and Organic Carbon Measurements in Samples Identified as Collected from the Coarse-Grained Material

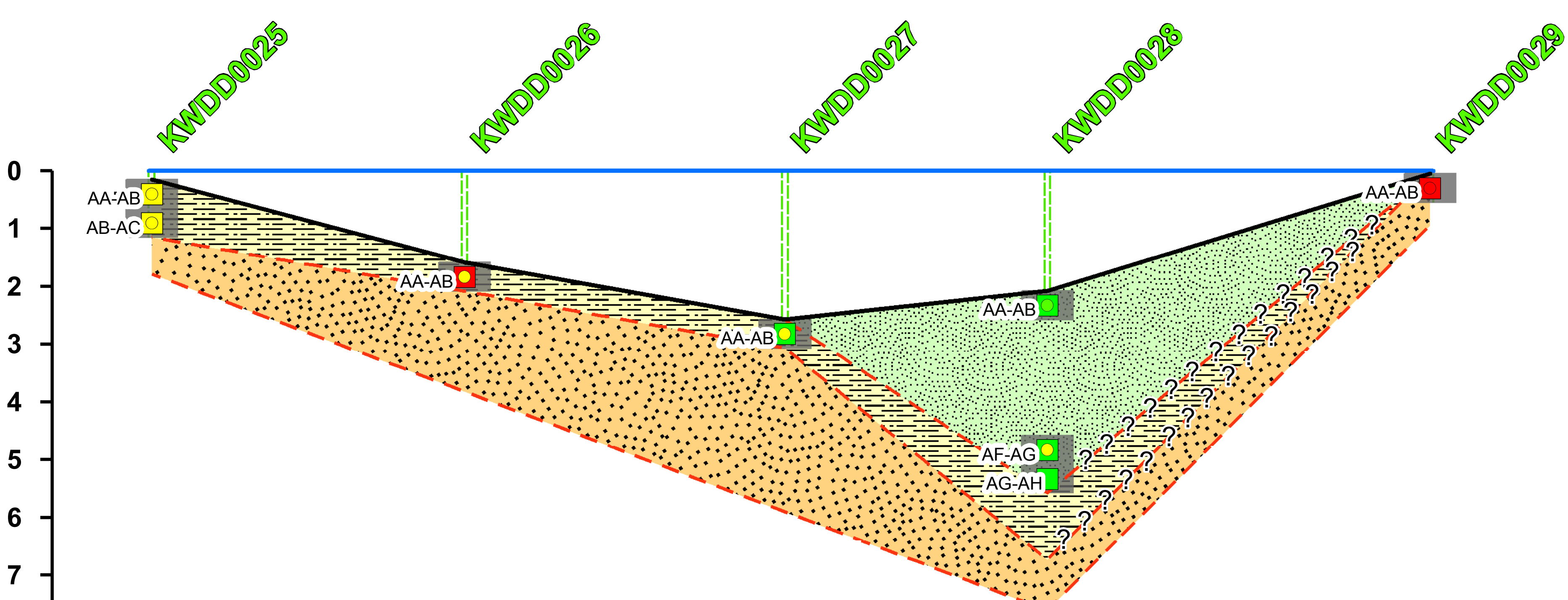
Kirkwood Lake Transect Number	Kirkwood Lake Sediment Sample Number	Deepest Sample Interval	Percent Solids	Organic Carbon (mg/kg)
KWT-1	KWDD0112	5.5’ – 6.0’ (AL-AM)	78.5	2,650
KWT-2	KWDD0004	3.5’ – 4.0’ (AH-AI)	58.6	38,700
KWT-6	KWDD0012	2.5’ – 3.0’ (AF-AG)	65.8	28,200
KWT-10	KWDD0018	3.0’ – 3.5’(AG-AH)	60.8	39,500
KWT-15	KWDD0022	2.5’ – 3.0’ (AF-AG)	52.3	63,100
	KWDD0024	3.0’ – 3.5’ (AG-AH)	76.9	5,030
KWT-20	KWDD0025	0.5 – 1.0’ (AB-AC)	60.9	20,700
	KWDD0028	3.0’ – 3.5’ (AG-AH)	16.7	251,000
KWT-23	KWDD0032	4.0’ - 4.5’ (AI-AJ)	45.3	67,800
	KWDD0036	4.5’ – 5.0’ (AJ-AK)	81	1,630
KWT-29	KWDD0038	10.5’ – 11.0’ (AV-AW)	80.7	2,300
	KWDD0041	3.0’ – 3.5’ (AG-AH)	32.1	99,100
KWT-35	KWDD0043	0.5 – 1.0’ (AB-AC)	73.1	14,800
	KWDD0048	3.0’ – 3.5’ (AG-AH)	37.1	103,000
KWT-40	KWDD0056**	2.5’ – 3.0’ (AF-AG)	35.7	126,000
KWT-46	KWDD0060	2.0’ – 2.5’ (AE-AF)	12.9	450,000
	KWDD0065	2.5’ – 3.0’ (AF-AG)	78.7	1,400
KWT-50	KWDD0069	0.5 – 1.0’ (AB-AC)	22.7	267,000
	KWDD0073	2.0’ – 2.5’ (AE-AF)	43.1	71,600
KWT-54	KWDD0080	2.5’ – 3.0’ (AF-AG)	60.2	30,900
KWT-58	KWDD0089	3.0’ – 3.5’ (AG-AH)	23.9	234,000
KWT-62	KWDD0093	2.5’ – 3.0’ (AF-AG)	67.2	9,730
	KWDD0097	1.0’ – 1.5’ (AC-AD)	77.7	29,500
KWT-66	KWDD0101	3.5’ – 4.0’ (AH-AI)	52.1	60,000
KWT-70	KWDD0104	2.0’ – 2.5’ (AE-AF)	28.5	154,000
	KWDD0106	2.0’ – 2.5’ (AE-AF)	79.3	11,100

** EPA comment letter referenced KWDD0055, but no samples were shown as being from coarse-grained material; assume reference was to KWDD0056.

FIGURES



PREVIOUS VERSION



NEW VERSION

LEGEND:

Total Organic Carbon	Percent Solids	Soil Classification	
100,000 - 300,000 mg/kg	0 - 30 %	Soft, Organic-Rich Sediment	Sample Interval
5,000 - 100,000 mg/kg	30 - 70 %	Transition Material	Uncertain Boundary
0 - 5,000 mg/kg	70 - 100 %	Coarse-Grained Material	Sample Station
			? Interpreted Transition Material Boundary

PROJECT: Sherwin-Williams Gibbsboro Remedial Investigation

CLIENT NAME: The Sherwin-Williams Company

TITLE: KIRKWOOD LAKE TRANSECT
SEDIMENT CROSS-SECTION COMPARISON
TOTAL ORGANIC CARBON AND PERCENT SOLIDS
KWT-20

DRAWING: L:\SHERWIN\GIS\MXD\0410_KWL\07920_KWT20_CrossSection_Comparison.mxd

FIGURE #: 1

DRAWN BY: S. Poultney

REVIEWED BY: G. Caprario

PROJECT MANAGER: A. Fischer

SCALE: NTS

DATE: 6-9-2010

LOCATION ID	KWDD0025	KWDD0026	KWDD0027	KWDD0028	KWDD0029
DEPTH	**AA-AB**	**AA-AB**	**AA-AB**	**AA-AB**	**AA-AB**
ARSENIC, TOTAL (mg/kg)	37.4 (16.5 J)	4.4	63.7 J	103 J	4.1
LEAD, TOTAL (mg/kg)	274 (105)	55.2	751 J	1490 J	5.5
PERCENT SOLIDS (%)	63.8 (66.7)	72.9	26.8	14.1	80.7
TOTAL ORGANIC CARBON (mg/kg)	19700 (45600)	47200	79800 J	126000 J	3040
DEPTH	**AB-AC**			**AF-AG**	
ARSENIC, TOTAL (mg/kg)	9.4 (8.6)			96.4 J	
LEAD, TOTAL (mg/kg)	R (R)			938 J	
PERCENT SOLIDS (%)	60.9 (60.1)			29.5	
TOTAL ORGANIC CARBON (mg/kg)	20700 (20700 J)			65600 J	
DEPTH				**AG-AH**	
ARSENIC, TOTAL (mg/kg)				20.2 J	
LEAD, TOTAL (mg/kg)				R	
PERCENT SOLIDS (%)				16.7	
TOTAL ORGANIC CARBON (mg/kg)				251000 J	

WESTON SOLUTIONS

DATE: 6-10-10

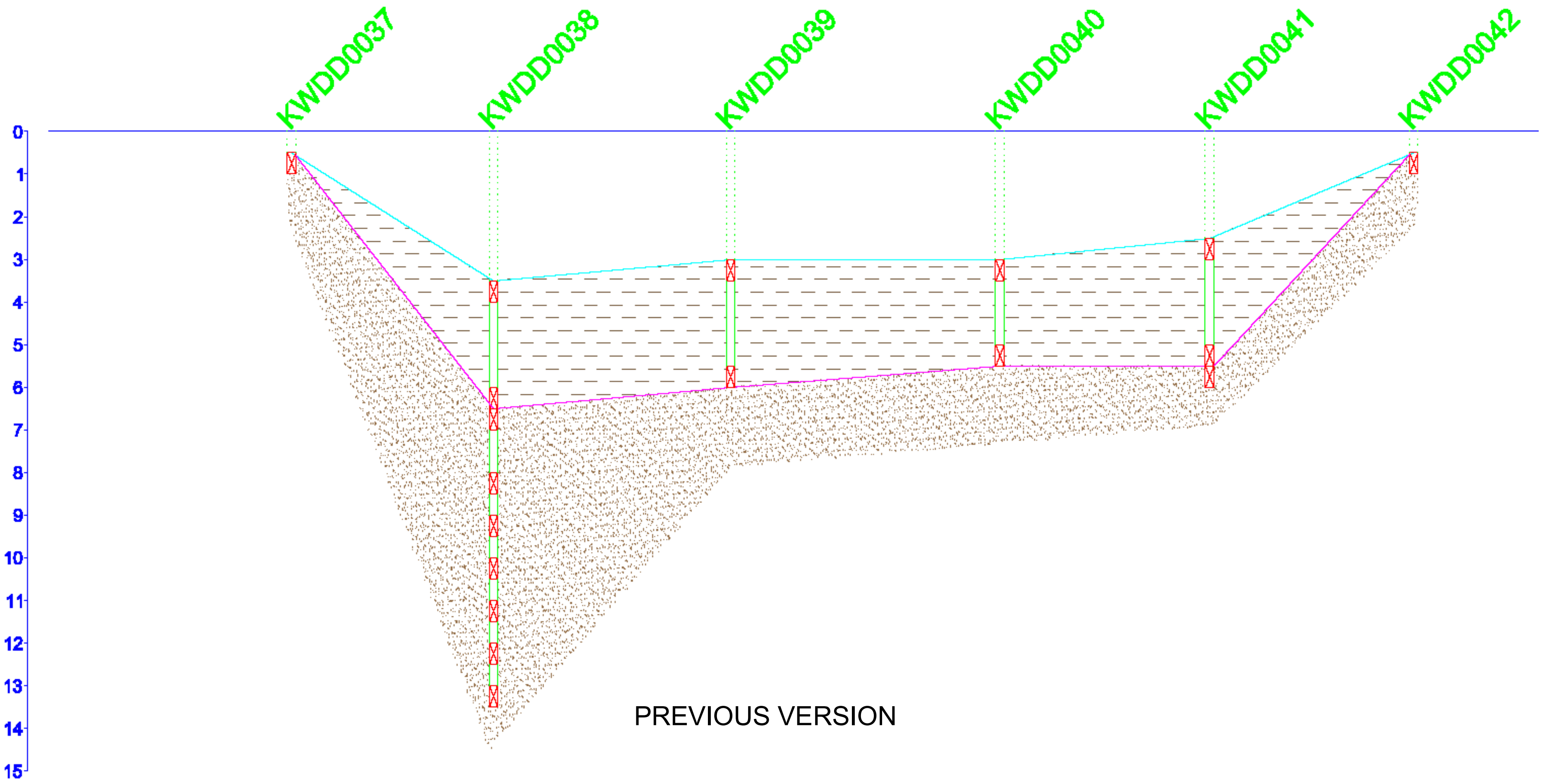
FIGURE #: 1A

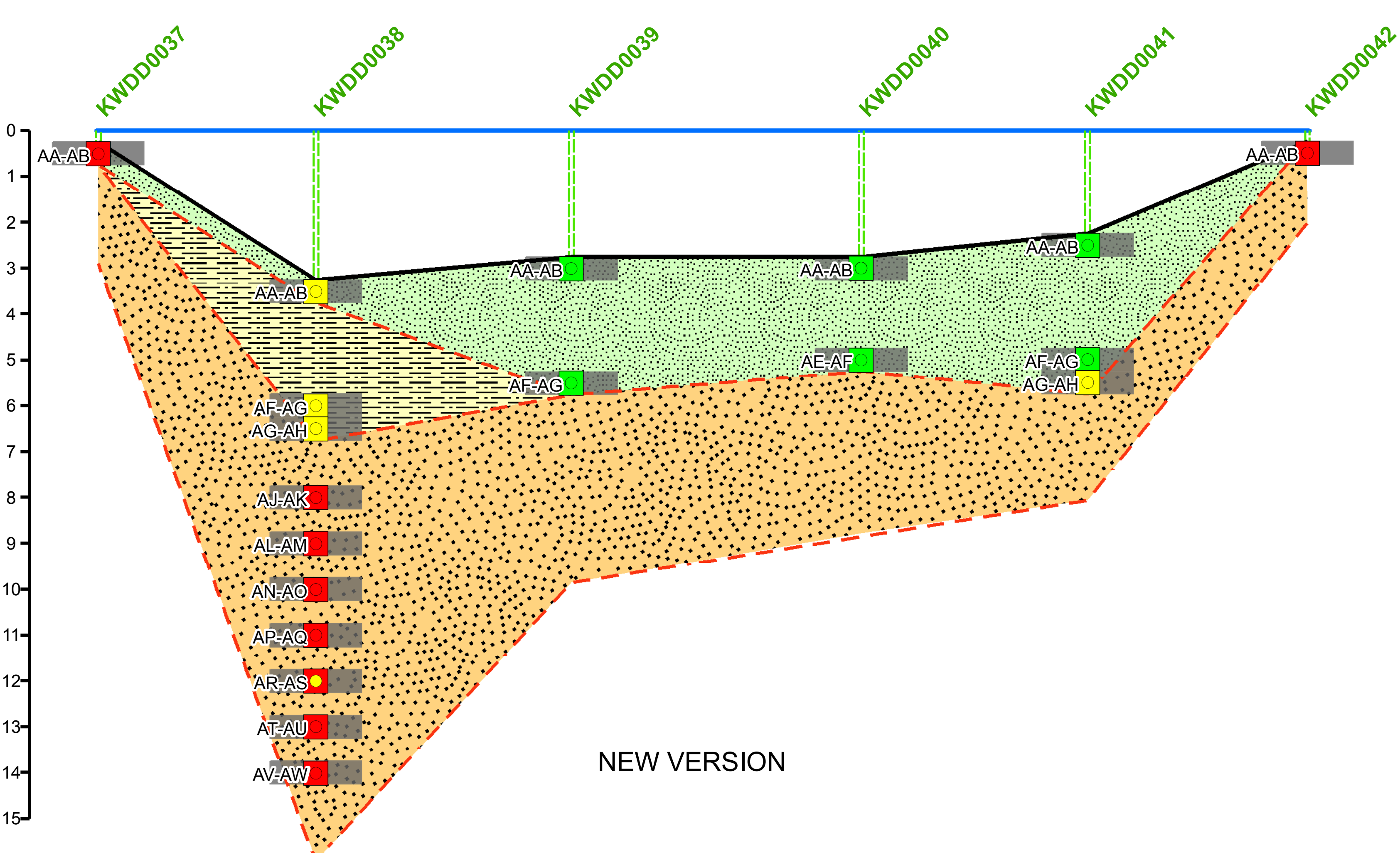
PROJECT: Sherwin-Williams Gibbsboro Remedial Investigation

CLIENT NAME: The Sherwin-Williams Company

TITLE: KIRKWOOD LAKE TRANSECT SEDIMENT CROSS-SECTION DATA TABLE KWT-20

L:\SHERWIN\GIS\MXD\0410_KWL07929_KWT-20_Data.mxd





LEGEND:

Total Organic Carbon	Percent Solids	Soil Classification	
100,000 - 300,000 mg/kg	0 - 30 %	Soft, Organic-Rich Sediment	Sample Interval
5,000 - 100,000 mg/kg	30 - 70 %	Transition Material	Uncertain Boundary
0 - 5,000 mg/kg	70 - 100 %	Coarse-Grained Material	Sample Station

WESTON SOLUTIONS

PROJECT: Sherwin-Williams Gibbsboro Remedial Investigation

CLIENT NAME: The Sherwin-Williams Company

TITLE: KIRKWOOD LAKE TRANSECT
SEDIMENT CROSS-SECTION COMPARISON
TOTAL ORGANIC CARBON AND PERCENT SOLIDS
KWT-29

DRAWING: L:\SHERWIN\GIS\MXD\0410_KWL\07922_KWT29_CrossSection_Comparison.mxd

FIGURE #: 2

DRAWN BY: S. Poultney

REVIEWED BY: G. Caprario

PROJECT MANAGER: A. Fischer

SCALE: NTS

DATE: 6-9-2010

COVER THE EARTH

SHERWIN WILLIAMS

LOCATION ID	KWDD0037	KWDD0038	KWDD0039	KWDD0040	KWDD0041	KWDD0042
DEPTH	**AA-AB**	**AA-AB**	**AA-AB**	**AA-AB**	**AA-AB**	**AA-AB**
ARSENIC, TOTAL (mg/kg)	1.2 J	58.1 J	106 J	122 J (119 J)	91.3 J	4.3
LEAD, TOTAL (mg/kg)	6.2	623 J	1620 J	1560 J (1540 J)	1270 J	17.3
PERCENT SOLIDS (%)	82.4	34.6	13.6	11.6 (11.8)	16.5	82.7
TOTAL ORGANIC CARBON (mg/kg)	800 J	57600 J	142000 J	138000 J (174000 J)	123000 J	1360 J
DEPTH		**AF-AG**	**AF-AG**	**AE-AF**	**AF-AG**	
ARSENIC, TOTAL (mg/kg)		40.7 J	94.1 J	132 J	304 J	
LEAD, TOTAL (mg/kg)		809 J	1220 J	1750 J	3890 J	
PERCENT SOLIDS (%)		42.1	23.1	20.4	24.8	
TOTAL ORGANIC CARBON (mg/kg)		54800 J	201000 J	144000 J	115000 J	
DEPTH		**AG-AH**			**AG-AH**	
ARSENIC, TOTAL (mg/kg)		10.9			5.4 J	
LEAD, TOTAL (mg/kg)		R			R	
PERCENT SOLIDS (%)		63.6			32.1	
TOTAL ORGANIC CARBON (mg/kg)		7110			99100 J	
DEPTH		**AJ-AK**				
ARSENIC, TOTAL (mg/kg)		25.3				
LEAD, TOTAL (mg/kg)		R				
PERCENT SOLIDS (%)		76.8				
TOTAL ORGANIC CARBON (mg/kg)		3750				
DEPTH		**AL-AM**				
ARSENIC, TOTAL (mg/kg)		19.9				
LEAD, TOTAL (mg/kg)		R				
PERCENT SOLIDS (%)		76.4				
TOTAL ORGANIC CARBON (mg/kg)		1990				
DEPTH		**AN-AO**				
ARSENIC, TOTAL (mg/kg)		22.7				
LEAD, TOTAL (mg/kg)		R				
PERCENT SOLIDS (%)		77.1				
TOTAL ORGANIC CARBON (mg/kg)		2260				
DEPTH		**AP-AQ**				
ARSENIC, TOTAL (mg/kg)		20.4				
LEAD, TOTAL (mg/kg)		R				
PERCENT SOLIDS (%)		76.6				
TOTAL ORGANIC CARBON (mg/kg)		1430				
DEPTH		**AR-AS**				
ARSENIC, TOTAL (mg/kg)		22.1 J				
LEAD, TOTAL (mg/kg)		5.3 J				
PERCENT SOLIDS (%)		78.9				
TOTAL ORGANIC CARBON (mg/kg)		5010				
DEPTH		**AT-AU**				
ARSENIC, TOTAL (mg/kg)		12.9 J				
LEAD, TOTAL (mg/kg)		3.5 J				
PERCENT SOLIDS (%)		81				
TOTAL ORGANIC CARBON (mg/kg)		2400				
DEPTH		**AV-AW**				
ARSENIC, TOTAL (mg/kg)		18.1 J				
LEAD, TOTAL (mg/kg)		4 J				
PERCENT SOLIDS (%)		80.7				
TOTAL ORGANIC CARBON (mg/kg)		2300				

DATE: 6-10-10

FIGURE #: 2A

PROJECT: Sherwin-Williams Gibbsboro Remedial Investigation

CLIENT NAME: The Sherwin-Williams Company

TITLE: KIRKWOOD LAKE TRANSECT SEDIMENT CROSS-SECTION DATA TABLE KWT-29

L:\SHERWIN\GIS\MXD\0410_KWL07930_KWT-29_Data.mxd

Legend

- Kirkwood Lake Pore Water and Surface Water Location (2007)
- Kirkwood Lake Soil Boring Location (2007)
- Kirkwood Lake Sediment Sample Location (2007)
- Kirkwood Lake Soil Boring Location (2008)
- Kirkwood Lake Sediment Sample Location (2008)
- Proposed Soil Boring Location
- Proposed Sediment Sample Location
- Proposed Sediment Sample Location (Vertical Delineation)
- Proposed Soil Boring Location (Horizontal Delineation)
- Proposed Soil Boring Location (Vertical Delineation)
- Transect Location
- Proposed Location For Residential Sampling

100 50 0 100 200

Graphic Scale In Feet

WESTON SOLUTIONS SM

Weston Solutions, Inc.

205 Campus Drive Edison, New Jersey 08837-3939
TEL: (732) 417-5800 Fax: (732) 417-5801
http://www.westonsolutions.com

COVER THE EARTH
SHERWIN WILLIAMS

REPORT DATE: June 2010	PROJECT MANAGER: S. Jones	CLIENT NAME: The Sherwin-Williams Company	DRAWING TITLE: KIRKWOOD LAKE PROPOSED SAMPLE LOCATION MAP
DRAWING PATH: 07737_KWL_Prop_Locations.mxd L:/SHERWIN/GIS/MXD/0310_KWL	CHECKED BY: A. Fischer		
REVISION No. 0	CONTRACT No.	PROJECT NAME: Sherwin-Williams Gibbsboro Remedial Investigation	
	DELIVERY ORDER NO.		
WORK ORDER No. 20076.022.080.0005	DRAWN/MODIFIED BY: J. Lynes		FIGURE: 3
	DATE CREATED: 03/17/2010		SCALE: 1" = 100'
			DATE: 06/04/2010

Legend

- Proposed Location For Residential Sampling
- June 2002 Sampling Round
- August 2003 Sampling Round
- December 2003 Sampling Round
- Samples Not Collected / Access Not Granted

WESTON SOLUTIONS SM

Weston Solutions, Inc.
205 Campus Drive Edison, New Jersey 08837-3939
TEL: (732) 417-5800 Fax: (732) 417-5801
http://www.westonsolutions.com

SHERWIN WILLIAMS

REPORT DATE: June 2010	PROJECT MANAGER: S. Jones	CLIENT NAME: The Sherwin-Williams Company	DRAWING TITLE: KIRKWOOD LAKE RESIDENTIAL SOIL SAMPLING PROGRAM
DRAWING PATH: 07741_KWL_Residential_Samples.mxd L:/SHERWIN/GIS/MXD/0310_KWL	CHECKED BY: A. Fischer		
REVISION No. 0	CONTRACT No. / DELIVERY ORDER NO.	PROJECT NAME: Sherwin-Williams Gibbsboro Remedial Investigation	
WORK ORDER No. 20076.022.080.0005	DRAWN/MODIFIED BY: J. Lynes DATE CREATED: 03/18/2010		FIGURE: 4 SCALE: 1" = 120' DATE: 06/03/2010

APPENDIX A

KIRKWOOD LAKE
SEDIMENT DETECTIONS
(ALL DEPTHS)

SITE NAME	SAMPLE MATRIX CODE	SAMPLE TYPE	LONG NAME	No. Detects	N	Min Detect	Mean	Max Detect	NJ RDCSRS mg/kg	Exceed Ratio	Num Exceed	Units
Kirkwood Lake	E	D	ALUMINUM, TOTAL	236	236	190	11472	46000	78000			MG/KG
Kirkwood Lake	E	D	ANTIMONY, TOTAL	127	236	0.21	1.4	17	31			MG/KG
Kirkwood Lake	E	D	ARSENIC, TOTAL	218	221	0.65	59	313	19	16	133	MG/KG
Kirkwood Lake	E	D	BARIUM, TOTAL	227	227	2.3	357	1440	16000			MG/KG
Kirkwood Lake	E	D	BERYLLIUM, TOTAL	227	236	0.039	0.63	3.6	16			MG/KG
Kirkwood Lake	E	D	CADMIUM, TOTAL	213	219	0.022	4.8	40	78			MG/KG
Kirkwood Lake	E	D	CALCIUM, TOTAL	236	236	21	4501	16900				MG/KG
Kirkwood Lake	E	D	CHROMIUM, TOTAL	236	236	1.2	110	700				MG/KG
Kirkwood Lake	E	D	COBALT, TOTAL	225	236	0.075	5.6	27	1600			MG/KG
Kirkwood Lake	E	D	COPPER, TOTAL	221	221	0.18	106	505	3100			MG/KG
Kirkwood Lake	E	D	CYANIDE, TOTAL	70	232	0.25	2.3	81	1600			MG/KG
Kirkwood Lake	E	D	IRON, TOTAL	236	236	88	18634	64200				MG/KG
Kirkwood Lake	E	D	LEAD, TOTAL	219	219	1.8	948	6360	400	16	115	MG/KG
Kirkwood Lake	E	D	MAGNESIUM, TOTAL	236	236	3.0	781	2670				MG/KG
Kirkwood Lake	E	D	MANGANESE, TOTAL	236	236	1.7	80	325	11000			MG/KG
Kirkwood Lake	E	D	MERCURY, TOTAL	114	236	0.060	0.31	1.3	23			MG/KG
Kirkwood Lake	E	D	NICKEL, TOTAL	234	236	0.31	18	471	1600			MG/KG
Kirkwood Lake	E	D	POTASSIUM, TOTAL	236	236	8.6	893	5250				MG/KG
Kirkwood Lake	E	D	SELENIUM, TOTAL	161	236	0.16	1.6	7.1	390			MG/KG
Kirkwood Lake	E	D	SILVER, TOTAL	76	183	0.080	0.67	3.7	390			MG/KG
Kirkwood Lake	E	D	SODIUM, TOTAL	204	236	4.7	158	1130				MG/KG
Kirkwood Lake	E	D	THALLIUM, TOTAL	15	236	0.26	0.63	2.6	5			MG/KG
Kirkwood Lake	E	D	VANADIUM, TOTAL	236	236	0.91	21	106	78	1.4	1	MG/KG
Kirkwood Lake	E	D	ZINC, TOTAL	236	236	1.7	517	2140	23000			MG/KG

KIRKWOOD LAKE
SEDIMENT DETECTIONS
(ALL DEPTHS)

SITE NAME	SAMPLE MATRIX CODE	SAMPLE TYPE	LONG NAME	No. Detects	N	Min Detect	Mean	Max Detect	NJ RDCSRS mg/kg	Exceed Ratio	Num Exceed	Units
Kirkwood Lake	E	D	AROCLOR-1016	0	175		0.079		0.2			MG/KG
Kirkwood Lake	E	D	AROCLOR-1221	0	175		0.079		0.2			MG/KG
Kirkwood Lake	E	D	AROCLOR-1232	0	175		0.079		0.2			MG/KG
Kirkwood Lake	E	D	AROCLOR-1242	6	175	0.079	0.082	0.29	0.2	1.4	1	MG/KG
Kirkwood Lake	E	D	AROCLOR-1248	0	175		0.079		0.2			MG/KG
Kirkwood Lake	E	D	AROCLOR-1254	65	175	0.027	0.16	0.62	0.2	3	42	MG/KG
Kirkwood Lake	E	D	AROCLOR-1260	15	175	0.051	0.085	0.18	0.2			MG/KG
Kirkwood Lake	E	D	ACENAPHTHENE	37	183	0.0050	0.57	3.5	3400			MG/KG
Kirkwood Lake	E	D	ACENAPHTHYLENE	63	183	0.0060	0.46	0.51				MG/KG
Kirkwood Lake	E	D	ANTHRACENE	91	183	0.0090	0.37	4.4	17000			MG/KG
Kirkwood Lake	E	D	BENZO(A)ANTHRACENE	136	183	0.0050	0.56	15	0.6	25	45	MG/KG
Kirkwood Lake	E	D	BENZO(A)PYRENE	131	183	0.0050	0.63	11	0.2	55	80	MG/KG
Kirkwood Lake	E	D	BENZO(B)FLUORANTHENE	135	183	0.0060	0.77	15	0.6	25	58	MG/KG
Kirkwood Lake	E	D	BENZO(G,H,I)PERYLENE	113	183	0.0100	0.36	1.2	380000			MG/KG
Kirkwood Lake	E	D	BENZO(K)FLUORANTHENE	135	183	0.0060	0.76	11	6	2	2	MG/KG
Kirkwood Lake	E	D	CHRYSENE	139	183	0.0050	0.76	14	62			MG/KG
Kirkwood Lake	E	D	FLUORANTHENE	144	183	0.0080	1.2	27	2300			MG/KG
Kirkwood Lake	E	D	FLUORENE	46	183	0.0050	0.54	2.7	2300			MG/KG
Kirkwood Lake	E	D	INDENO(1,2,3-CD)PYRENE	123	183	0.0060	0.35	3.2	0.6	5	14	MG/KG
Kirkwood Lake	E	D	NAPHTHALENE	19	183	0.012	0.59	0.21	6			MG/KG
Kirkwood Lake	E	D	PHENANTHRENE	134	183	0.0050	0.60	18				MG/KG
Kirkwood Lake	E	D	PYRENE	146	183	0.0060	0.92	20	1700			MG/KG

KIRKWOOD LAKE
PCB DETECTIONS IN SEDIMENT
(BY DEPTH)

SITE NAME	SAMPLE TOP	SAMPLE BOTTOM	SAMPLE MATRIX CODE	SAMPLE TYPE	LONGNAME	No. Detects	N	Min Detect	Mean	Max Detect	NJ RDCSRS mg/kg	Exceed Ratio	Num Exceed	Units
Kirkwood Lake	0	0.5	E	D	AROCLOR-1016	0	118		0.082		0.2			MG/KG
Kirkwood Lake	0	0.5	E	D	AROCLOR-1221	0	118		0.082		0.2			MG/KG
Kirkwood Lake	0	0.5	E	D	AROCLOR-1232	0	118		0.082		0.2			MG/KG
Kirkwood Lake	0	0.5	E	D	AROCLOR-1242	2	118	0.11	0.085	0.29	0.2	1.4	1	MG/KG
Kirkwood Lake	0	0.5	E	D	AROCLOR-1248	0	118		0.082		0.2			MG/KG
Kirkwood Lake	0	0.5	E	D	AROCLOR-1254	55	118	0.027	0.19	0.56	0.2	3	36	MG/KG
Kirkwood Lake	0	0.5	E	D	AROCLOR-1260	9	118	0.051	0.088	0.16	0.2			MG/KG
Kirkwood Lake	1.5	2	E	D	AROCLOR-1016	0	12		0.16		0.2			MG/KG
Kirkwood Lake	1.5	2	E	D	AROCLOR-1221	0	12		0.16		0.2			MG/KG
Kirkwood Lake	1.5	2	E	D	AROCLOR-1232	0	12		0.16		0.2			MG/KG
Kirkwood Lake	1.5	2	E	D	AROCLOR-1242	0	12		0.16		0.2			MG/KG
Kirkwood Lake	1.5	2	E	D	AROCLOR-1248	0	12		0.16		0.2			MG/KG
Kirkwood Lake	1.5	2	E	D	AROCLOR-1254	0	12		0.16		0.2			MG/KG
Kirkwood Lake	1.5	2	E	D	AROCLOR-1260	0	12		0.16		0.2			MG/KG
Kirkwood Lake	2	2.5	E	D	AROCLOR-1016	0	22		0.035		0.2			MG/KG
Kirkwood Lake	2	2.5	E	D	AROCLOR-1221	0	22		0.035		0.2			MG/KG
Kirkwood Lake	2	2.5	E	D	AROCLOR-1232	0	22		0.035		0.2			MG/KG
Kirkwood Lake	2	2.5	E	D	AROCLOR-1242	2	22	0.079	0.042	0.13	0.2			MG/KG
Kirkwood Lake	2	2.5	E	D	AROCLOR-1248	0	22		0.035		0.2			MG/KG
Kirkwood Lake	2	2.5	E	D	AROCLOR-1254	5	22	0.082	0.10	0.62	0.2	3	4	MG/KG
Kirkwood Lake	2	2.5	E	D	AROCLOR-1260	3	22	0.064	0.047	0.18	0.2			MG/KG

KIRKWOOD LAKE
PCB DETECTIONS IN SEDIMENT
(BY DEPTH)

SITE NAME	SAMPLE TOP	SAMPLE BOTTOM	SAMPLE MATRIX CODE	SAMPLE TYPE	LONGNAME	No. Detects	N	Min Detect	Mean	Max Detect	NJ RDCSRS mg/kg	Exceed Ratio	Num Exceed	Units
Kirkwood Lake	2.5	3	E	D	AROCLOR-1016	0	17		0.063		0.2			MG/KG
Kirkwood Lake	2.5	3	E	D	AROCLOR-1221	0	17		0.063		0.2			MG/KG
Kirkwood Lake	2.5	3	E	D	AROCLOR-1232	0	17		0.063		0.2			MG/KG
Kirkwood Lake	2.5	3	E	D	AROCLOR-1242	2	17	0.083	0.071	0.11	0.2			MG/KG
Kirkwood Lake	2.5	3	E	D	AROCLOR-1248	0	17		0.063		0.2			MG/KG
Kirkwood Lake	2.5	3	E	D	AROCLOR-1254	4	17	0.029	0.12	0.50	0.2	3	2	MG/KG
Kirkwood Lake	2.5	3	E	D	AROCLOR-1260	2	17	0.12	0.075	0.14	0.2			MG/KG
Kirkwood Lake	3	3.5	E	D	AROCLOR-1016	0	4		0.053		0.2			MG/KG
Kirkwood Lake	3	3.5	E	D	AROCLOR-1221	0	4		0.053		0.2			MG/KG
Kirkwood Lake	3	3.5	E	D	AROCLOR-1232	0	4		0.053		0.2			MG/KG
Kirkwood Lake	3	3.5	E	D	AROCLOR-1242	0	4		0.053		0.2			MG/KG
Kirkwood Lake	3	3.5	E	D	AROCLOR-1248	0	4		0.053		0.2			MG/KG
Kirkwood Lake	3	3.5	E	D	AROCLOR-1254	1	4	0.11	0.074	0.11	0.2			MG/KG
Kirkwood Lake	3	3.5	E	D	AROCLOR-1260	1	4	0.071	0.064	0.071	0.2			MG/KG
Kirkwood Lake	3.5	4	E	D	AROCLOR-1016	0	2		0.036		0.2			MG/KG
Kirkwood Lake	3.5	4	E	D	AROCLOR-1221	0	2		0.036		0.2			MG/KG
Kirkwood Lake	3.5	4	E	D	AROCLOR-1232	0	2		0.036		0.2			MG/KG
Kirkwood Lake	3.5	4	E	D	AROCLOR-1242	0	2		0.036		0.2			MG/KG
Kirkwood Lake	3.5	4	E	D	AROCLOR-1248	0	2		0.036		0.2			MG/KG
Kirkwood Lake	3.5	4	E	D	AROCLOR-1254	0	2		0.036		0.2			MG/KG
Kirkwood Lake	3.5	4	E	D	AROCLOR-1260	0	2		0.036		0.2			MG/KG

KIRKWOOD LAKE
SOIL DETECTIONS
(BY DEPTH)

SITE NAME	SAMPLE TOP	SAMPLE BOTTOM	SAMPLE MATRIX CODE	SAMPLE TYPE	LONG NAME	No. Detects	N	Min Detect	Mean	Max Detect	NJ RDCSRS mg/kg	Exceed Ratio	Num Exceed	Units
Kirkwood Lake	0	0.5	S	B	ALUMINUM, TOTAL	39	39	603	2977	14200	78000			MG/KG
Kirkwood Lake	0	0.5	S	B	ANTIMONY, TOTAL	19	39	0.78	2.0	29	31			MG/KG
Kirkwood Lake	0	0.5	S	B	ARSENIC, TOTAL	35	39	0.92	6.8	27	19	1.4	4	MG/KG
Kirkwood Lake	0	0.5	S	B	BARIUM, TOTAL	39	39	2.9	52	498	16000			MG/KG
Kirkwood Lake	0	0.5	S	B	BERYLLIUM, TOTAL	22	39	0.050	0.12	0.47	16			MG/KG
Kirkwood Lake	0	0.5	S	B	CADMIUM, TOTAL	22	39	0.090	0.36	1.9	78			MG/KG
Kirkwood Lake	0	0.5	S	B	CALCIUM, TOTAL	39	39	25	878	6460				MG/KG
Kirkwood Lake	0	0.5	S	B	CHROMIUM, TOTAL	38	39	2.1	16	72				MG/KG
Kirkwood Lake	0	0.5	S	B	COBALT, TOTAL	12	39	0.58	0.67	3.6	1600			MG/KG
Kirkwood Lake	0	0.5	S	B	COPPER, TOTAL	39	39	1.2	20	85	3100			MG/KG
Kirkwood Lake	0	0.5	S	B	CYANIDE, TOTAL	11	39	0.13	0.16	2.7	1600			MG/KG
Kirkwood Lake	0	0.5	S	B	IRON, TOTAL	39	39	651	6386	21500				MG/KG
Kirkwood Lake	0	0.5	S	B	LEAD, TOTAL	39	39	15	190	1680	400	4	4	MG/KG
Kirkwood Lake	0	0.5	S	B	MAGNESIUM, TOTAL	39	39	20	340	3210				MG/KG
Kirkwood Lake	0	0.5	S	B	MANGANESE, TOTAL	39	39	3.0	18	128	11000			MG/KG
Kirkwood Lake	0	0.5	S	B	MERCURY, TOTAL	21	39	0.040	0.12	0.76	23			MG/KG
Kirkwood Lake	0	0.5	S	B	NICKEL, TOTAL	39	39	0.40	3.3	8.9	1600			MG/KG
Kirkwood Lake	0	0.5	S	B	POTASSIUM, TOTAL	39	39	69	401	1870				MG/KG
Kirkwood Lake	0	0.5	S	B	SELENIUM, TOTAL	3	39	1.4	0.86	3.7	390			MG/KG
Kirkwood Lake	0	0.5	S	B	SILVER, TOTAL	2	39	0.26	0.16	0.38	390			MG/KG
Kirkwood Lake	0	0.5	S	B	SODIUM, TOTAL	36	39	34	175	606				MG/KG
Kirkwood Lake	0	0.5	S	B	THALLIUM, TOTAL	0	39		0.84		5			MG/KG
Kirkwood Lake	0	0.5	S	B	VANADIUM, TOTAL	39	39	3.4	11	26	78			MG/KG
Kirkwood Lake	0	0.5	S	B	ZINC, TOTAL	39	39	1.6	56	428	23000			MG/KG
Kirkwood Lake	0	0.5	S	B	ACENAPHTHENE	11	39	0.0040	0.22	0.025	3400			MG/KG
Kirkwood Lake	0	0.5	S	B	ACENAPHTHYLENE	10	39	0.0090	0.21	0.28				MG/KG
Kirkwood Lake	0	0.5	S	B	ANTHRACENE	18	39	0.0090	0.17	0.16	17000			MG/KG
Kirkwood Lake	0	0.5	S	B	BENZO(A)ANTHRACENE	33	39	0.0050	0.16	0.82	0.6	1.4	2	MG/KG
Kirkwood Lake	0	0.5	S	B	BENZO(A)PYRENE	27	39	0.0050	0.22	1.1	0.2	6	6	MG/KG
Kirkwood Lake	0	0.5	S	B	BENZO(B)FLUORANTHENE	32	39	0.0060	0.29	2.0	0.6	3	5	MG/KG
Kirkwood Lake	0	0.5	S	B	BENZO(G,H,I)PERYLENE	8	39	0.013	0.24	0.14	380000			MG/KG
Kirkwood Lake	0	0.5	S	B	BENZO(K)FLUORANTHENE	32	39	0.0070	0.27	1.8	6			MG/KG
Kirkwood Lake	0	0.5	S	B	CHRYSENE	34	39	0.0060	0.19	1.1	62			MG/KG
Kirkwood Lake	0	0.5	S	B	FLUORANTHENE	35	39	0.0060	0.32	2.0	2300			MG/KG

KIRKWOOD LAKE
SOIL DETECTIONS
(BY DEPTH)

SITE NAME	SAMPLE TOP	SAMPLE BOTTOM	SAMPLE MATRIX CODE	SAMPLE TYPE	LONG NAME	No. Detects	N	Min Detect	Mean	Max Detect	NJ RDCSRS mg/kg	Exceed Ratio	Num Exceed	Units
Kirkwood Lake	0	0.5	S	B	FLUORENE	8	39	0.0050	0.24	0.037	2300			MG/KG
Kirkwood Lake	0	0.5	S	B	INDENO(1,2,3-CD)PYRENE	18	39	0.0060	0.19	0.44	0.6			MG/KG
Kirkwood Lake	0	0.5	S	B	NAPHTHALENE	1	39	0.016	0.27	0.016	6			MG/KG
Kirkwood Lake	0	0.5	S	B	PHENANTHRENE	33	39	0.0060	0.17	0.75				MG/KG
Kirkwood Lake	0	0.5	S	B	PYRENE	35	39	0.0060	0.26	1.8	1700			MG/KG
Kirkwood Lake	2	2.5	S	B	ALUMINUM, TOTAL	31	31	160	2896	15900	78000			MG/KG
Kirkwood Lake	2	2.5	S	B	ANTIMONY, TOTAL	0	31		0.42		31			MG/KG
Kirkwood Lake	2	2.5	S	B	ARSENIC, TOTAL	23	31	0.85	8.2	56	19	3	3	MG/KG
Kirkwood Lake	2	2.5	S	B	BARIUM, TOTAL	31	31	0.62	19	74	16000			MG/KG
Kirkwood Lake	2	2.5	S	B	BERYLLIUM, TOTAL	17	31	0.070	0.11	0.42	16			MG/KG
Kirkwood Lake	2	2.5	S	B	CADMIUM, TOTAL	12	31	0.13	0.14	0.56	78			MG/KG
Kirkwood Lake	2	2.5	S	B	CALCIUM, TOTAL	25	31	22	381	1960				MG/KG
Kirkwood Lake	2	2.5	S	B	CHROMIUM, TOTAL	31	31	0.74	23	170				MG/KG
Kirkwood Lake	2	2.5	S	B	COBALT, TOTAL	6	31	0.64	0.43	1.8	1600			MG/KG
Kirkwood Lake	2	2.5	S	B	COPPER, TOTAL	24	31	0.40	3.6	17	3100			MG/KG
Kirkwood Lake	2	2.5	S	B	CYANIDE, TOTAL	5	31	0.060	0.055	0.48	1600			MG/KG
Kirkwood Lake	2	2.5	S	B	IRON, TOTAL	31	31	34	9287	61300				MG/KG
Kirkwood Lake	2	2.5	S	B	LEAD, TOTAL	31	31	1.3	29	136	400			MG/KG
Kirkwood Lake	2	2.5	S	B	MAGNESIUM, TOTAL	29	31	14	271	1450				MG/KG
Kirkwood Lake	2	2.5	S	B	MANGANESE, TOTAL	31	31	0.55	10	52	11000			MG/KG
Kirkwood Lake	2	2.5	S	B	MERCURY, TOTAL	2	31	0.070	0.038	0.24	23			MG/KG
Kirkwood Lake	2	2.5	S	B	NICKEL, TOTAL	30	31	0.25	1.9	7.7	1600			MG/KG
Kirkwood Lake	2	2.5	S	B	POTASSIUM, TOTAL	30	31	43	577	3870				MG/KG
Kirkwood Lake	2	2.5	S	B	SELENIUM, TOTAL	4	31	1.7	0.78	3.2	390			MG/KG
Kirkwood Lake	2	2.5	S	B	SILVER, TOTAL	1	31	0.26	0.12	0.26	390			MG/KG
Kirkwood Lake	2	2.5	S	B	SODIUM, TOTAL	20	31	37	101	638				MG/KG
Kirkwood Lake	2	2.5	S	B	THALLIUM, TOTAL	0	31		0.65		5			MG/KG
Kirkwood Lake	2	2.5	S	B	VANADIUM, TOTAL	29	31	1.5	13	91	78	1.2	1	MG/KG
Kirkwood Lake	2	2.5	S	B	ZINC, TOTAL	26	31	0.52	19	160	23000			MG/KG
Kirkwood Lake	2	2.5	S	B	ACENAPHTHENE	5	31	0.0090	0.20	0.47	3400			MG/KG
Kirkwood Lake	2	2.5	S	B	ACENAPHTHYLENE	4	31	0.018	0.21	0.53				MG/KG
Kirkwood Lake	2	2.5	S	B	ANTHRACENE	10	31	0.0060	0.20	1.5	17000			MG/KG
Kirkwood Lake	2	2.5	S	B	BENZO(A)ANTHRACENE	12	31	0.013	0.34	5.6	0.6	9	1	MG/KG
Kirkwood Lake	2	2.5	S	B	BENZO(A)PYRENE	13	31	0.0050	0.32	5.1	0.2	25	2	MG/KG

KIRKWOOD LAKE
SOIL DETECTIONS
(BY DEPTH)

SITE NAME	SAMPLE TOP	SAMPLE BOTTOM	SAMPLE MATRIX CODE	SAMPLE TYPE	LONG NAME	No. Detects	N	Min Detect	Mean	Max Detect	NJ RDCSRS mg/kg	Exceed Ratio	Num Exceed	Units
Kirkwood Lake	2	2.5	S	B	BENZO(B)FLUORANTHENE	13	31	0.0050	0.33	4.9	0.6	8	1	MG/KG
Kirkwood Lake	2	2.5	S	B	BENZO(G,H,I)PERYLENE	2	31	0.058	0.22	0.61	380000			MG/KG
Kirkwood Lake	2	2.5	S	B	BENZO(K)FLUORANTHENE	13	31	0.0080	0.36	5.9	6			MG/KG
Kirkwood Lake	2	2.5	S	B	CHRYSENE	13	31	0.0060	0.34	5.6	62			MG/KG
Kirkwood Lake	2	2.5	S	B	FLUORANTHENE	13	31	0.011	0.67	15	2300			MG/KG
Kirkwood Lake	2	2.5	S	B	FLUORENE	5	31	0.020	0.20	0.50	2300			MG/KG
Kirkwood Lake	2	2.5	S	B	INDENO(1,2,3-CD)PYRENE	6	31	0.0060	0.26	2.5	0.6	4	1	MG/KG
Kirkwood Lake	2	2.5	S	B	NAPHTHALENE	1	31	0.11	0.21	0.11	6			MG/KG
Kirkwood Lake	2	2.5	S	B	PHENANTHRENE	13	31	0.0060	0.40	7.7				MG/KG
Kirkwood Lake	2	2.5	S	B	PYRENE	14	31	0.0080	0.44	8.4	1700			MG/KG
Kirkwood Lake	4	4.5	S	B	ALUMINUM, TOTAL	3	3	1590	2550	3420	78000			MG/KG
Kirkwood Lake	4	4.5	S	B	ANTIMONY, TOTAL	0	3		0.41		31			MG/KG
Kirkwood Lake	4	4.5	S	B	ARSENIC, TOTAL	2	3	1.8	6.3	17	19			MG/KG
Kirkwood Lake	4	4.5	S	B	BARIUM, TOTAL	3	3	3.7	11	20	16000			MG/KG
Kirkwood Lake	4	4.5	S	B	BERYLLIUM, TOTAL	3	3	0.080	0.14	0.21	16			MG/KG
Kirkwood Lake	4	4.5	S	B	CADMIUM, TOTAL	1	3	1.8	0.63	1.8	78			MG/KG
Kirkwood Lake	4	4.5	S	B	CALCIUM, TOTAL	3	3	118	204	329				MG/KG
Kirkwood Lake	4	4.5	S	B	CHROMIUM, TOTAL	3	3	6.7	43	108				MG/KG
Kirkwood Lake	4	4.5	S	B	COBALT, TOTAL	0	3		0.29		1600			MG/KG
Kirkwood Lake	4	4.5	S	B	COPPER, TOTAL	3	3	0.76	2.0	3.6	3100			MG/KG
Kirkwood Lake	4	4.5	S	B	CYANIDE, TOTAL	0	3		0.018		1600			MG/KG
Kirkwood Lake	4	4.5	S	B	IRON, TOTAL	3	3	1980	7853	17000				MG/KG
Kirkwood Lake	4	4.5	S	B	LEAD, TOTAL	3	3	2.5	13	33	400			MG/KG
Kirkwood Lake	4	4.5	S	B	MAGNESIUM, TOTAL	3	3	138	357	753				MG/KG
Kirkwood Lake	4	4.5	S	B	MANGANESE, TOTAL	3	3	2.2	4.2	7.3	11000			MG/KG
Kirkwood Lake	4	4.5	S	B	MERCURY, TOTAL	0	3		0.028		23			MG/KG
Kirkwood Lake	4	4.5	S	B	NICKEL, TOTAL	3	3	0.88	1.1	1.5	1600			MG/KG
Kirkwood Lake	4	4.5	S	B	POTASSIUM, TOTAL	3	3	366	1105	2310				MG/KG
Kirkwood Lake	4	4.5	S	B	SELENIUM, TOTAL	1	3	1.6	0.90	1.6	390			MG/KG
Kirkwood Lake	4	4.5	S	B	SILVER, TOTAL	0	3		0.11		390			MG/KG
Kirkwood Lake	4	4.5	S	B	SODIUM, TOTAL	0	3		16					MG/KG
Kirkwood Lake	4	4.5	S	B	THALLIUM, TOTAL	0	3		0.63		5			MG/KG
Kirkwood Lake	4	4.5	S	B	VANADIUM, TOTAL	3	3	3.4	11	24	78			MG/KG
Kirkwood Lake	4	4.5	S	B	ZINC, TOTAL	3	3	2.2	5.9	9.3	23000			MG/KG

KIRKWOOD LAKE
SOIL DETECTIONS
(BY DEPTH)

SITE NAME	SAMPLE TOP	SAMPLE BOTTOM	SAMPLE MATRIX CODE	SAMPLE TYPE	LONG NAME	No. Detects	N	Min Detect	Mean	Max Detect	NJ RDCSRS mg/kg	Exceed Ratio	Num Exceed	Units
Kirkwood Lake	4	4.5	S	B	ACENAPHTHENE	0	3		0.21		3400			MG/KG
Kirkwood Lake	4	4.5	S	B	ACENAPHTHYLENE	0	3		0.21					MG/KG
Kirkwood Lake	4	4.5	S	B	ANTHRACENE	0	3		0.21		17000			MG/KG
Kirkwood Lake	4	4.5	S	B	BENZO(A)ANTHRACENE	1	3	0.015	0.15	0.015	0.6			MG/KG
Kirkwood Lake	4	4.5	S	B	BENZO(A)PYRENE	1	3	0.012	0.15	0.012	0.2			MG/KG
Kirkwood Lake	4	4.5	S	B	BENZO(B)FLUORANTHENE	1	3	0.015	0.15	0.015	0.6			MG/KG
Kirkwood Lake	4	4.5	S	B	BENZO(G,H,I)PERYLENE	0	3		0.21		380000			MG/KG
Kirkwood Lake	4	4.5	S	B	BENZO(K)FLUORANTHENE	1	3	0.017	0.15	0.017	6			MG/KG
Kirkwood Lake	4	4.5	S	B	CHRYSENE	1	3	0.019	0.15	0.019	62			MG/KG
Kirkwood Lake	4	4.5	S	B	FLUORANTHENE	1	3	0.035	0.16	0.035	2300			MG/KG
Kirkwood Lake	4	4.5	S	B	FLUORENE	0	3		0.21		2300			MG/KG
Kirkwood Lake	4	4.5	S	B	INDENO(1,2,3-CD)PYRENE	1	3	0.0080	0.15	0.0080	0.6			MG/KG
Kirkwood Lake	4	4.5	S	B	NAPHTHALENE	0	3		0.21		6			MG/KG
Kirkwood Lake	4	4.5	S	B	PHENANTHRENE	1	3	0.018	0.15	0.018				MG/KG
Kirkwood Lake	4	4.5	S	B	PYRENE	1	3	0.022	0.15	0.022	1700			MG/KG
Kirkwood Lake	6	6.5	S	B	ALUMINUM, TOTAL	3	3	3150	3520	3840	78000			MG/KG
Kirkwood Lake	6	6.5	S	B	ANTIMONY, TOTAL	0	3		0.40		31			MG/KG
Kirkwood Lake	6	6.5	S	B	ARSENIC, TOTAL	3	3	6.0	13	23	19	1.2	1	MG/KG
Kirkwood Lake	6	6.5	S	B	BARIUM, TOTAL	3	3	2.7	8.2	14	16000			MG/KG
Kirkwood Lake	6	6.5	S	B	BERYLLIUM, TOTAL	3	3	0.11	0.18	0.23	16			MG/KG
Kirkwood Lake	6	6.5	S	B	CADMIUM, TOTAL	0	3		0.050		78			MG/KG
Kirkwood Lake	6	6.5	S	B	CALCIUM, TOTAL	3	3	49	201	435				MG/KG
Kirkwood Lake	6	6.5	S	B	CHROMIUM, TOTAL	3	3	28	104	214				MG/KG
Kirkwood Lake	6	6.5	S	B	COBALT, TOTAL	0	3		0.35		1600			MG/KG
Kirkwood Lake	6	6.5	S	B	COPPER, TOTAL	3	3	0.96	2.7	4.6	3100			MG/KG
Kirkwood Lake	6	6.5	S	B	CYANIDE, TOTAL	0	3		0.020		1600			MG/KG
Kirkwood Lake	6	6.5	S	B	IRON, TOTAL	3	3	8870	20790	40400				MG/KG
Kirkwood Lake	6	6.5	S	B	LEAD, TOTAL	3	3	3.6	4.2	5.2	400			MG/KG
Kirkwood Lake	6	6.5	S	B	MAGNESIUM, TOTAL	3	3	326	549	687				MG/KG
Kirkwood Lake	6	6.5	S	B	MANGANESE, TOTAL	3	3	2.0	4.6	8.5	11000			MG/KG
Kirkwood Lake	6	6.5	S	B	MERCURY, TOTAL	0	3		0.027		23			MG/KG
Kirkwood Lake	6	6.5	S	B	NICKEL, TOTAL	3	3	0.76	1.1	1.3	1600			MG/KG
Kirkwood Lake	6	6.5	S	B	POTASSIUM, TOTAL	3	3	904	1488	2060				MG/KG
Kirkwood Lake	6	6.5	S	B	SELENIUM, TOTAL	2	3	1.7	1.5	2.3	390			MG/KG

KIRKWOOD LAKE
SOIL DETECTIONS
(BY DEPTH)

SITE NAME	SAMPLE TOP	SAMPLE BOTTOM	SAMPLE MATRIX CODE	SAMPLE TYPE	LONG NAME	No. Detects	N	Min Detect	Mean	Max Detect	NJ RDCSRS mg/kg	Exceed Ratio	Num Exceed	Units
Kirkwood Lake	6	6.5	S	B	SILVER, TOTAL	0	3		0.11		390			MG/KG
Kirkwood Lake	6	6.5	S	B	SODIUM, TOTAL	2	3	36	45	44				MG/KG
Kirkwood Lake	6	6.5	S	B	THALLIUM, TOTAL	0	3		0.65		5			MG/KG
Kirkwood Lake	6	6.5	S	B	VANADIUM, TOTAL	3	3	22	36	58	78			MG/KG
Kirkwood Lake	6	6.5	S	B	ZINC, TOTAL	3	3	5.0	5.5	5.9	23000			MG/KG
Kirkwood Lake	6	6.5	S	B	ACENAPHTHENE	0	3		0.21		3400			MG/KG
Kirkwood Lake	6	6.5	S	B	ACENAPHTHYLENE	0	3		0.21					MG/KG
Kirkwood Lake	6	6.5	S	B	ANTHRACENE	0	3		0.21		17000			MG/KG
Kirkwood Lake	6	6.5	S	B	BENZO(A)ANTHRACENE	0	3		0.21		0.6			MG/KG
Kirkwood Lake	6	6.5	S	B	BENZO(A)PYRENE	0	3		0.21		0.2			MG/KG
Kirkwood Lake	6	6.5	S	B	BENZO(B)FLUORANTHENE	0	3		0.21		0.6			MG/KG
Kirkwood Lake	6	6.5	S	B	BENZO(G,H,I)PERYLENE	0	3		0.21		380000			MG/KG
Kirkwood Lake	6	6.5	S	B	BENZO(K)FLUORANTHENE	0	3		0.21		6			MG/KG
Kirkwood Lake	6	6.5	S	B	CHRYSENE	0	3		0.21		62			MG/KG
Kirkwood Lake	6	6.5	S	B	FLUORANTHENE	0	3		0.21		2300			MG/KG
Kirkwood Lake	6	6.5	S	B	FLUORENE	0	3		0.21		2300			MG/KG
Kirkwood Lake	6	6.5	S	B	INDENO(1,2,3-CD)PYRENE	0	3		0.21		0.6			MG/KG
Kirkwood Lake	6	6.5	S	B	NAPHTHALENE	0	3		0.21		6			MG/KG
Kirkwood Lake	6	6.5	S	B	PHENANTHRENE	0	3		0.21					MG/KG
Kirkwood Lake	6	6.5	S	B	PYRENE	0	3		0.21		1700			MG/KG
Kirkwood Lake	8	8.5	S	B	ALUMINUM, TOTAL	1	1	2660	2660	2660	78000			MG/KG
Kirkwood Lake	8	8.5	S	B	ANTIMONY, TOTAL	0	1		0.32		31			MG/KG
Kirkwood Lake	8	8.5	S	B	ARSENIC, TOTAL	1	1	10	10	10	19			MG/KG
Kirkwood Lake	8	8.5	S	B	BARIUM, TOTAL	1	1	11	11	11	16000			MG/KG
Kirkwood Lake	8	8.5	S	B	BERYLLIUM, TOTAL	1	1	0.12	0.12	0.12	16			MG/KG
Kirkwood Lake	8	8.5	S	B	CADMIUM, TOTAL	0	1		0.045		78			MG/KG
Kirkwood Lake	8	8.5	S	B	CALCIUM, TOTAL	1	1	154	154	154				MG/KG
Kirkwood Lake	8	8.5	S	B	CHROMIUM, TOTAL	1	1	27	27	27				MG/KG
Kirkwood Lake	8	8.5	S	B	COBALT, TOTAL	0	1		0.43		1600			MG/KG
Kirkwood Lake	8	8.5	S	B	COPPER, TOTAL	1	1	1.3	1.3	1.3	3100			MG/KG
Kirkwood Lake	8	8.5	S	B	CYANIDE, TOTAL	0	1		0.020		1600			MG/KG
Kirkwood Lake	8	8.5	S	B	IRON, TOTAL	1	1	7210	7210	7210				MG/KG
Kirkwood Lake	8	8.5	S	B	LEAD, TOTAL	1	1	7.4	7.4	7.4	400			MG/KG
Kirkwood Lake	8	8.5	S	B	MAGNESIUM, TOTAL	1	1	265	265	265				MG/KG

KIRKWOOD LAKE
SOIL DETECTIONS
(BY DEPTH)

SITE NAME	SAMPLE TOP	SAMPLE BOTTOM	SAMPLE MATRIX CODE	SAMPLE TYPE	LONG NAME	No. Detects	N	Min Detect	Mean	Max Detect	NJ RDCSRS mg/kg	Exceed Ratio	Num Exceed	Units
Kirkwood Lake	8	8.5	S	B	MANGANESE, TOTAL	1	1	11	11	11	11000			MG/KG
Kirkwood Lake	8	8.5	S	B	MERCURY, TOTAL	0	1		0.025		23			MG/KG
Kirkwood Lake	8	8.5	S	B	NICKEL, TOTAL	1	1	1.2	1.2	1.2	1600			MG/KG
Kirkwood Lake	8	8.5	S	B	POTASSIUM, TOTAL	1	1	570	570	570				MG/KG
Kirkwood Lake	8	8.5	S	B	SELENIUM, TOTAL	0	1		0.55		390			MG/KG
Kirkwood Lake	8	8.5	S	B	SILVER, TOTAL	0	1		0.090		390			MG/KG
Kirkwood Lake	8	8.5	S	B	SODIUM, TOTAL	0	1		49					MG/KG
Kirkwood Lake	8	8.5	S	B	THALLIUM, TOTAL	0	1		0.60		5			MG/KG
Kirkwood Lake	8	8.5	S	B	VANADIUM, TOTAL	1	1	12	12	12	78			MG/KG
Kirkwood Lake	8	8.5	S	B	ZINC, TOTAL	1	1	11	11	11	23000			MG/KG
Kirkwood Lake	8	8.5	S	B	ACENAPHTHENE	0	1		0.19		3400			MG/KG
Kirkwood Lake	8	8.5	S	B	ACENAPHTHYLENE	0	1		0.19					MG/KG
Kirkwood Lake	8	8.5	S	B	ANTHRACENE	0	1		0.19		17000			MG/KG
Kirkwood Lake	8	8.5	S	B	BENZO(A)ANTHRACENE	0	1		0.19		0.6			MG/KG
Kirkwood Lake	8	8.5	S	B	BENZO(A)PYRENE	0	1		0.19		0.2			MG/KG
Kirkwood Lake	8	8.5	S	B	BENZO(B)FLUORANTHENE	0	1		0.19		0.6			MG/KG
Kirkwood Lake	8	8.5	S	B	BENZO(G,H,I)PERYLENE	0	1		0.19		380000			MG/KG
Kirkwood Lake	8	8.5	S	B	BENZO(K)FLUORANTHENE	0	1		0.19		6			MG/KG
Kirkwood Lake	8	8.5	S	B	CHRYSENE	0	1		0.19		62			MG/KG
Kirkwood Lake	8	8.5	S	B	FLUORANTHENE	0	1		0.19		2300			MG/KG
Kirkwood Lake	8	8.5	S	B	FLUORENE	0	1		0.19		2300			MG/KG
Kirkwood Lake	8	8.5	S	B	INDENO(1,2,3-CD)PYRENE	0	1		0.19		0.6			MG/KG
Kirkwood Lake	8	8.5	S	B	NAPHTHALENE	0	1		0.19		6			MG/KG
Kirkwood Lake	8	8.5	S	B	PHENANTHRENE	0	1		0.19					MG/KG
Kirkwood Lake	8	8.5	S	B	PYRENE	0	1		0.19		1700			MG/KG

KIRKWOOD LAKE
SOIL DETECTIONS
(ALL DEPTHS)

SITE NAME	SAMPLE MATRIX CODE	SAMPLE TYPE	LONG NAME	No. Detects	N	Min Detect	Mean	Max Detect	NJ RDCSRS mg/kg	Exceed Ratio	Num Exceed	Units
Kirkwood Lake	S	B	ALUMINUM, TOTAL	77	77	160	2945	15900	78000			MG/KG
Kirkwood Lake	S	B	ANTIMONY, TOTAL	19	77	0.78	1.2	29	31			MG/KG
Kirkwood Lake	S	B	ARSENIC, TOTAL	64	77	0.85	7.6	56	19	3	8	MG/KG
Kirkwood Lake	S	B	BARIUM, TOTAL	77	77	0.62	35	498	16000			MG/KG
Kirkwood Lake	S	B	BERYLLIUM, TOTAL	46	77	0.050	0.12	0.47	16			MG/KG
Kirkwood Lake	S	B	CADMIUM, TOTAL	35	77	0.090	0.26	1.9	78			MG/KG
Kirkwood Lake	S	B	CALCIUM, TOTAL	71	77	22	616	6460				MG/KG
Kirkwood Lake	S	B	CHROMIUM, TOTAL	76	77	0.74	24	214				MG/KG
Kirkwood Lake	S	B	COBALT, TOTAL	18	77	0.58	0.54	3.6	1600			MG/KG
Kirkwood Lake	S	B	COPPER, TOTAL	70	77	0.40	12	85	3100			MG/KG
Kirkwood Lake	S	B	CYANIDE, TOTAL	16	77	0.060	0.10	2.7	1600			MG/KG
Kirkwood Lake	S	B	IRON, TOTAL	77	77	34	8183	61300				MG/KG
Kirkwood Lake	S	B	LEAD, TOTAL	77	77	1.3	109	1680	400	4	4	MG/KG
Kirkwood Lake	S	B	MAGNESIUM, TOTAL	75	77	14	320	3210				MG/KG
Kirkwood Lake	S	B	MANGANESE, TOTAL	77	77	0.55	14	128	11000			MG/KG
Kirkwood Lake	S	B	MERCURY, TOTAL	23	77	0.040	0.077	0.76	23			MG/KG
Kirkwood Lake	S	B	NICKEL, TOTAL	76	77	0.25	2.6	8.9	1600			MG/KG
Kirkwood Lake	S	B	POTASSIUM, TOTAL	76	77	43	544	3870				MG/KG
Kirkwood Lake	S	B	SELENIUM, TOTAL	10	77	1.4	0.85	3.7	390			MG/KG
Kirkwood Lake	S	B	SILVER, TOTAL	3	77	0.26	0.14	0.38	390			MG/KG
Kirkwood Lake	S	B	SODIUM, TOTAL	58	77	34	132	638				MG/KG
Kirkwood Lake	S	B	THALLIUM, TOTAL	0	77		0.74		5			MG/KG
Kirkwood Lake	S	B	VANADIUM, TOTAL	75	77	1.5	13	91	78	1.2	1	MG/KG
Kirkwood Lake	S	B	ZINC, TOTAL	72	77	0.52	37	428	23000			MG/KG

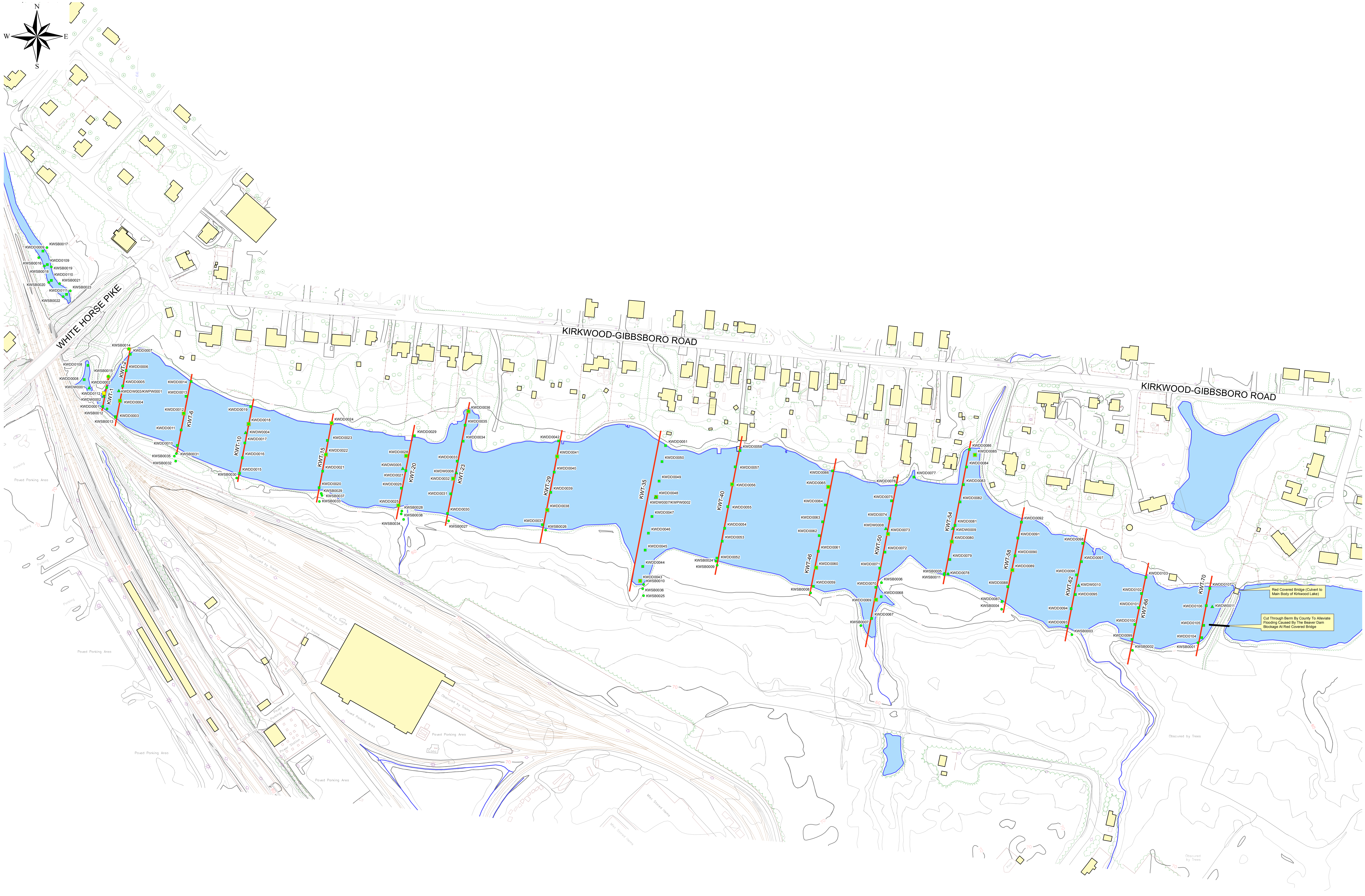
KIRKWOOD LAKE
SOIL DETECTIONS
(ALL DEPTHS)

SITE NAME	SAMPLE MATRIX CODE	SAMPLE TYPE	LONG NAME	No. Detects	N	Min Detect	Mean	Max Detect	NJ RDCSRS mg/kg	Exceed Ratio	Num Exceed	Units
Kirkwood Lake	S	B	ACENAPHTHENE	16	77	0.0040	0.21	0.47	3400			MG/KG
Kirkwood Lake	S	B	ACENAPHTHYLENE	14	77	0.0090	0.21	0.53				MG/KG
Kirkwood Lake	S	B	ANTHRACENE	28	77	0.0060	0.19	1.5	17000			MG/KG
Kirkwood Lake	S	B	BENZO(A)ANTHRACENE	46	77	0.005	0.23	5.6	0.6	9	3	MG/KG
Kirkwood Lake	S	B	BENZO(A)PYRENE	41	77	0.005	0.26	5.1	0.2	25	8	MG/KG
Kirkwood Lake	S	B	BENZO(B)FLUORANTHENE	46	77	0.005	0.30	4.9	0.6	8	6	MG/KG
Kirkwood Lake	S	B	BENZO(G,H,I)PERYLENE	10	77	0.013	0.23	0.61	380000			MG/KG
Kirkwood Lake	S	B	BENZO(K)FLUORANTHENE	46	77	0.0070	0.30	5.9	6			MG/KG
Kirkwood Lake	S	B	CHRYSENE	48	77	0.0060	0.25	5.6	62			MG/KG
Kirkwood Lake	S	B	FLUORANTHENE	49	77	0.0060	0.45	15	2300			MG/KG
Kirkwood Lake	S	B	FLUORENE	13	77	0.0050	0.22	0.50	2300			MG/KG
Kirkwood Lake	S	B	INDENO(1,2,3-CD)PYRENE	25	77	0.006	0.22	2.5	0.6	4	1	MG/KG
Kirkwood Lake	S	B	NAPHTHALENE	2	77	0.016	0.24	0.11	6			MG/KG
Kirkwood Lake	S	B	PHENANTHRENE	47	77	0.0060	0.26	7.7				MG/KG
Kirkwood Lake	S	B	PYRENE	50	77	0.0060	0.33	8.4	1700			MG/KG

KIRKWOOD LAKE
SOIL DATA
(BY SAMPLE LOCATION)

SITE NAME	SAMPLE TOP	SAMPLE BOTTOM	SAMPLE MATRIX CODE	SAMPLE TYPE	LONGNAME	FIELD SAMPLE ID	VALUE	Flag	NJ RDCSRS mg/kg	Exceed Ratio	Units
Kirkwood Lake	0	0.5	S	B	ARSENIC, TOTAL	KWSB0013-SS-AA-AB-0	25.2		19	1.3	MG/KG
Kirkwood Lake	0	0.5	S	B	ARSENIC, TOTAL	KWSB0028-SS-AA-AB-0	22.9	J	19	1.2	MG/KG
Kirkwood Lake	0	0.5	S	B	ARSENIC, TOTAL	KWSB0028-SS-AA-AB-1	27	J	19	1.4	MG/KG
Kirkwood Lake	0	0.5	S	B	ARSENIC, TOTAL	KWSB0038-SS-AA-AB-0	21.5	J	19	1.1	MG/KG
Kirkwood Lake	0	0.5	S	B	LEAD, TOTAL	KWSB0004-SS-AA-AB-0	487	J	400	1.2	MG/KG
Kirkwood Lake	0	0.5	S	B	LEAD, TOTAL	KWSB0007-SS-AA-AB-0	914	J	400	2	MG/KG
Kirkwood Lake	0	0.5	S	B	LEAD, TOTAL	KWSB0013-SS-AA-AB-0	1680		400	4	MG/KG
Kirkwood Lake	0	0.5	S	B	LEAD, TOTAL	KWSB0035-SS-AA-AB-0	592		400	1.5	MG/KG
Kirkwood Lake	0	0.5	S	B	BENZO(A)ANTHRACENE	KWSB0017-SS-AA-AB-0	0.74		0.6	1.2	MG/KG
Kirkwood Lake	0	0.5	S	B	BENZO(A)ANTHRACENE	KWSB0018-SS-AA-AB-0	0.82		0.6	1.4	MG/KG
Kirkwood Lake	0	0.5	S	B	BENZO(A)PYRENE	KWSB0016-SS-AA-AB-0	0.41	J	0.2	2	MG/KG
Kirkwood Lake	0	0.5	S	B	BENZO(A)PYRENE	KWSB0017-SS-AA-AB-0	1	J	0.2	5	MG/KG
Kirkwood Lake	0	0.5	S	B	BENZO(A)PYRENE	KWSB0018-SS-AA-AB-0	1.1	J	0.2	6	MG/KG
Kirkwood Lake	0	0.5	S	B	BENZO(A)PYRENE	KWSB0019-SS-AA-AB-0	0.58	J	0.2	3	MG/KG
Kirkwood Lake	0	0.5	S	B	BENZO(A)PYRENE	KWSB0020-SS-AA-AB-0	0.33	J	0.2	2	MG/KG
Kirkwood Lake	0	0.5	S	B	BENZO(A)PYRENE	KWSB0032-SS-AA-AB-0	0.33	J	0.2	2	MG/KG
Kirkwood Lake	0	0.5	S	B	BENZO(B)FLUORANTHENE	KWSB0016-SS-AA-AB-0	0.76		0.6	1.3	MG/KG
Kirkwood Lake	0	0.5	S	B	BENZO(B)FLUORANTHENE	KWSB0017-SS-AA-AB-0	1.8	J	0.6	3	MG/KG
Kirkwood Lake	0	0.5	S	B	BENZO(B)FLUORANTHENE	KWSB0018-SS-AA-AB-0	2	J	0.6	3	MG/KG
Kirkwood Lake	0	0.5	S	B	BENZO(B)FLUORANTHENE	KWSB0019-SS-AA-AB-0	0.96	J	0.6	2	MG/KG
Kirkwood Lake	0	0.5	S	B	BENZO(B)FLUORANTHENE	KWSB0032-SS-AA-AB-0	0.99		0.6	2	MG/KG
Kirkwood Lake	2	2.5	S	B	ARSENIC, TOTAL	KWSB0006-SS-AE-AF-0	49.2		19	3	MG/KG
Kirkwood Lake	2	2.5	S	B	ARSENIC, TOTAL	KWSB0010-SS-AE-AF-0	55.8		19	3	MG/KG
Kirkwood Lake	2	2.5	S	B	ARSENIC, TOTAL	KWSB0018-SS-AE-AF-0	21.1		19	1.1	MG/KG
Kirkwood Lake	2	2.5	S	B	VANADIUM, TOTAL	KWSB0010-SS-AE-AF-0	90.8		78	1.2	MG/KG
Kirkwood Lake	2	2.5	S	B	BENZO(A)ANTHRACENE	KWSB0032-SS-AE-AF-0	5.6		0.6	9	MG/KG
Kirkwood Lake	2	2.5	S	B	BENZO(A)PYRENE	KWSB0031-SS-AE-AF-0	0.27	J	0.2	1.4	MG/KG
Kirkwood Lake	2	2.5	S	B	BENZO(A)PYRENE	KWSB0032-SS-AE-AF-0	5.1		0.2	25	MG/KG
Kirkwood Lake	2	2.5	S	B	BENZO(B)FLUORANTHENE	KWSB0032-SS-AE-AF-0	4.9		0.6	8	MG/KG
Kirkwood Lake	2	2.5	S	B	INDENO(1,2,3-CD)PYRENE	KWSB0032-SS-AE-AF-0	2.5	J	0.6	4	MG/KG
Kirkwood Lake	6	6.5	S	B	ARSENIC, TOTAL	KWSB0038-SS-AM-AN-0	22.5		19	1.2	MG/KG

APPENDIX B



Legend

- Kirkwood Lake Pore Water and Surface Water Location (2007)
- Kirkwood Lake Soil Boring Location (2007)
- Kirkwood Lake Sediment Sample Location (2007)
- Kirkwood Lake Soil Boring Location (2008)
- Kirkwood Lake Sediment Sample Location (2008)
- Transect Location

100 50 0 100 200
Graphic Scale In Feet

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205 Campus Drive Edison, New Jersey 08837-3939
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http://www.westonsolutions.com

COVER THE EARTH
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REPORT DATE: April 2009	PROJECT MANAGER: S. Jones	CLIENT NAME: The Sherwin-Williams Company	DRAWING TITLE: KIRKWOOD LAKE SAMPLE LOCATION MAP
DRAWING: 05946_KWL_Sample_Loc.mxd PATH: L:/SHERWIN/GIS/ MXD/0708_Site_Wide	CHECKED BY: A. Fischer		
REVISION No. 0	CONTRACT No. DELIVERY ORDER NO.	PROJECT NAME: Sherwin-Williams Gibbsboro Remedial Investigation	
WORK ORDER No. 20076.022.077.0005	DRAWN/MODIFIED BY: J. Lynes DATE CREATED: 04/14/2009		FIGURE: 1 SCALE: 1" = 100' DATE: 04/30/2009

APPENDIX C

GIBBSBORO
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

PROPERTY OWNER SURVEY QUESTIONNAIRE

PROPERTY OWNER:	**DATE:**
RESIDENCE ADDRESS:	**INTERVIEWER:**

1. How long have you owned or rented the property in question?
2. During the period you have owned your property, have you observed any discolored soils, stressed vegetation or any unusual odors?
3. Has there been any sampling conducted at the property?
4. If so, who conducted the sampling, for what purposes was this conducted and are the sample results available?
5. Has there been any remedial, construction, landscaping, clearing or any other earth disturbing activities conducted at the property?
6. Can you provide the details of any earth disturbing activities described above if any were conducted, and provide any maps, drawings or design plans if available?

PROPERTY OWNER SURVEY QUESTIONNAIRE

PROPERTY OWNER: **DATE:**

RESIDENCE ADDRESS: **INTERVIEWER:**

7. If any earth moving activities were conducted at the property, was anything unusual discovered such as empty containers, discolored soils, or foul odors?

8. Has any additional soil/fill been introduced to the property or any low-lying area filled?

9. Have any structures been established on the property (i.e. new deck or shed) or any extension added to the home?

10. Are there any plans to conduct any landscaping, tree removal, extensions, and/or other construction activities in the near or distant future at the property?

11. Other notes/comments: